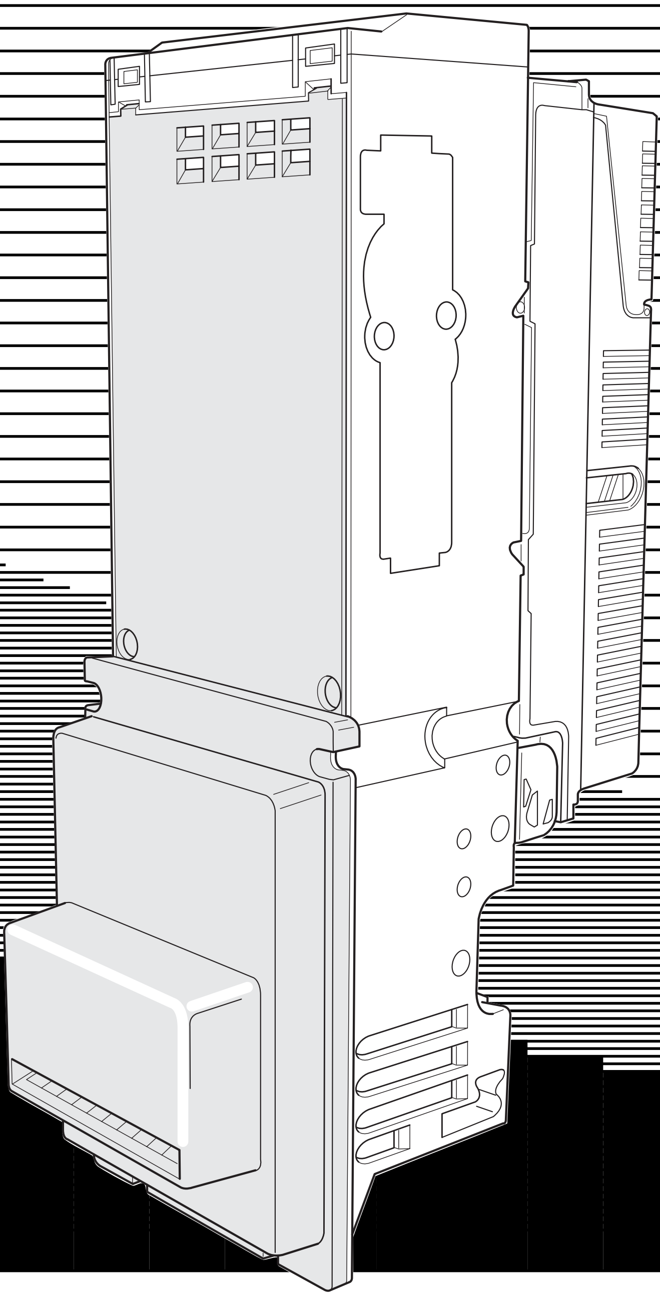
$1, $5 and Coupons BILL VALIDATOR

NBM-3000 SERIES

Service Manual



CONLUX®

TABLE OF CONTENTS

1. OUTLINE

The NBM-3000 Series Bill Validator has been developed based upon the M.D.B. communication specifications. This validator is equipped with many added features, such as all plastic construction, built-in antisalting system, accepts U.S. $1, $5 and coupons, vertical sensing, flash Rom programming, unique bill stacking method and other exclusive features.

2. GENERAL SPECIFICATIONS
Specifications and design are subject to change without notice.

Items	NBM-3000 Series
Currency Acceptance	US $1, $5, and coupons (For use of coupons, check with the applicable specifications.)
Acceptance Rate	90% or higher
Cycle Duration	1 Second approx. (time to identify vend signal)
Accepts Bill	Lengthwise, face up, two directions (For coupons, lengthwise, fase up, one direction)
Validation Method and Conditions	
*Shape Determined	Yes (optical method)
*Pattern Determined	Yes
*Method of Validation	Parallel use of magnetic and optical
Escrow Function	Yes (single bill escrow)
Bill Pullback Prevention	Yes (shutter system)
Stacker Function	Yes
*Bill Storage Method	Stacks upright in a row
*Number of Bills Stored	Based on new bills: (see table below)
*Bill Removal	In bundles
Number of Motors Used in Equipment	3 D.C. motors
Operating Temperature Range	+5°F ~ 140°F (-15°C ~ +60°C)
Insulation Resistance	20 Mohm or higher
Insulation Voltage Limit	500 V for 1 min.
Weight	(see table below)
Power Supply	34 V D.C. ± 10%
Rated Consumption/Operating Stale	(see table below)
Mounting Angle	Within 1° of vertical

Number of Bills Stored:

Number of bills	700 ± 70 bills	400 ± 50 bills
NBM Model	NBM-3110	NBM-3120
	NBM-3130	NBM-3140
	NBM-3110-M	NBM-3120-M

Weight:

NBM Model	NBM-3110	NBM-3120	NBM-3130	NBM-3140
Number of bills	700 Stacker	400 Stacker	700 Stacker	400 Stacker
Weight(Approx.)	2.31Lbs.(1.05kg)	2.20Lbs.(1.00kg)	2.43Lbs.(1.10kg)	2.34Lbs.(1.06kg)
NBM Model	NBM-3110-M	NBM-3120-M		
Number of bills	700 Stacker	400 Stacker		
Weight(Approx.)	2.80Lbs.(1.27kg)	2.71Lbs.(1.23kg)		

Rated Consumption/Operating Stale:

	34 V D.C.	
Standby	0.3 A or less	
*1 Operation	0.6 A or less	
*2 Max. Load	1.2 A or less	

*1 Peak current when motor is operating: 1.6A, 20ms
*2 When motor is locked: Approx. 4s

The 34 V DC circuit of this product is provided with a 2.5 A fuse whose actual fusing current is 5 A (200% of the rated value of 2.5 A). Therefore, when designing the power supply of the vending machine, be sure that it can supply a current larger than 5.0 A.

* Detailed Specifications

(1) Identified as a Genuine Bill

When the authentic bill (US $1, $5 or Coupon) is inserted into the validator and is found to be genuine, this information is sent to the main controller.

(2) Identified as a Counterfeit Bill

The inserted counterfeit bill is automatically returned.

* Bills 146mm or shorter and 166mm or longer.
* Bills having an unclear optical pattern.

(3) Inserted Bill Not Accepted

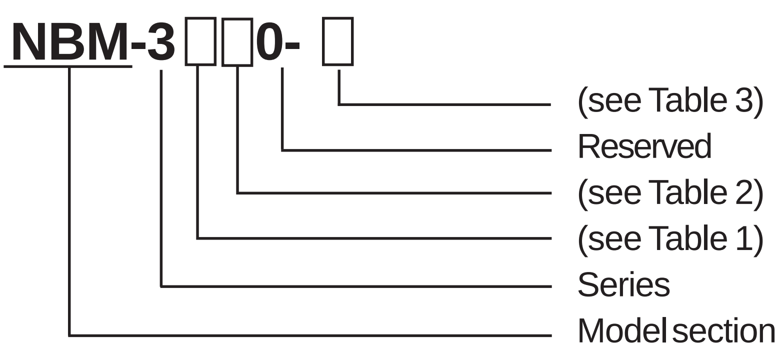
The bill validator is unable to accept bills in the following cases:

* When the stacker is determined to be full.
* When the validator develops a motor fault.
* When the validator develops a sensor fault. (Dirty)
* If a bill jam operation.
* When the bill is pulled from the validator during operation.

(4) When the Stacker is Full

The full signal is sent to the main controller when the stacker is full. To clear this signal; open the stacker, remove the bills and close (safety switch ON/OFF) the stacker. This is transmitted to the main controller.

3. Quick Model Reference Chart for NBM-3000 Series



(Table 1)

Code	Denomination
1	$1, $5 and Coupons

(Table 3)

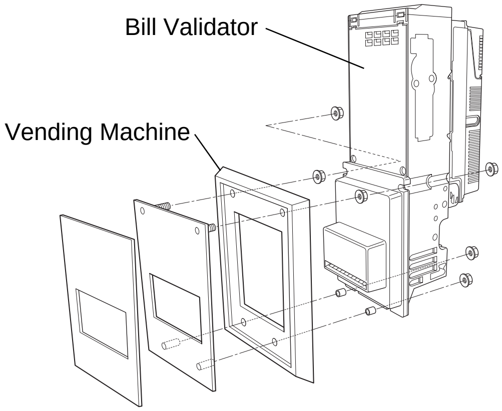
Code	Front mask
Non	Plastic
M	Metal

(Table 2)

Code	Front mask	Stacker Box	Nunmber of bills in Stacker	Front lamp	Front mask material (See Table 3)
1	(1)	5.9 in	700	Yes	Plastic
				No	Metal
2	(1)	4.3 in	400	Yes	Plastic
				No	Metal
3	(2)	5.9 in	700	No	Plastic
4	(2)	4.3 in	400	No	Plastic

4. INSTALLATION

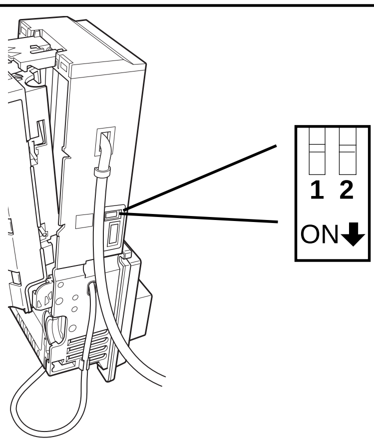
4-1 Installation



After installing this unit into a vending machine.
* Connect the validator to the vendor.
* Turn power on!

CAUTION: Do not connect or disconnect with power present.

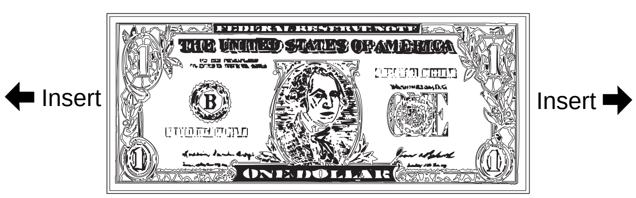
4-2 Setting Option Switches



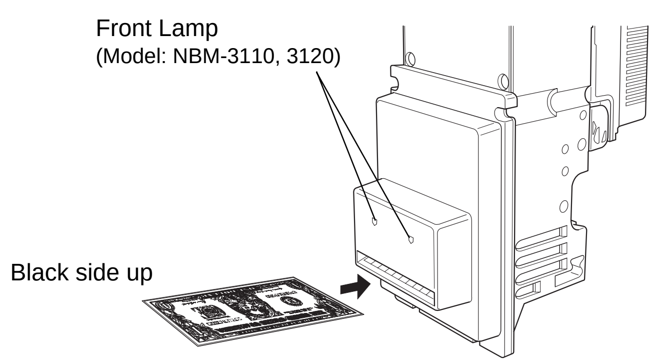
The option switches on the control board are as follows:

No.	Switch	ON/OFF	Details
1	Coupon select SW	ON	Accept
		OFF	Inhibit
2	$5 Switch	ON	Accept
		OFF	Inhibit

4-3 Bill Insertion



A U.S. $1 or $5 bill can be inserted black side up, any lengthwise direction.
Coupons can only be inserted face up and direction.



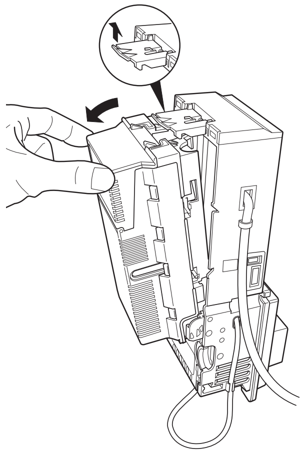
* Front lamp indication (only for models with the front lamp)
The front lamp indicates the bill acceptance state in the following mode:

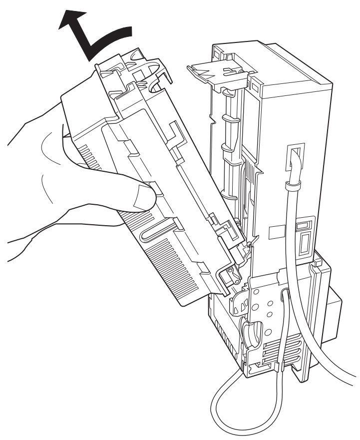
Front lamp flash/turn-off mode

Bill acceptance state	Flash/Turn-off mode
Acceptance enable state	Flash Repeat the cycle consisting of lit (0.3 s), turned off (0.3 s), lit (0.3 s), and turned off (0.7 s).
Acceptance disable state	Turn off

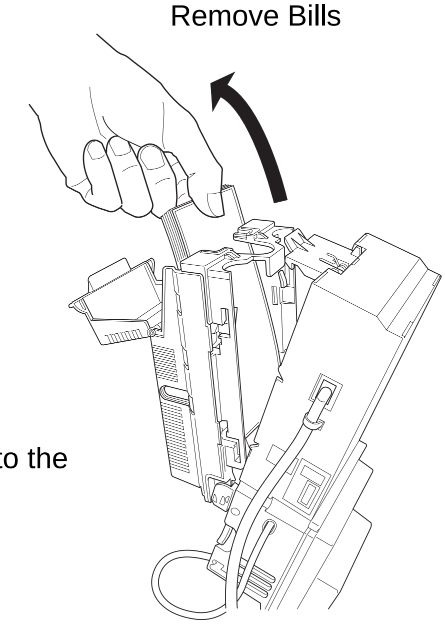
4-4 Bill Removal

To Remove Bills: Lift the white latch upwards to open the stacker lid.
The stacker assy is now removable from the validator.

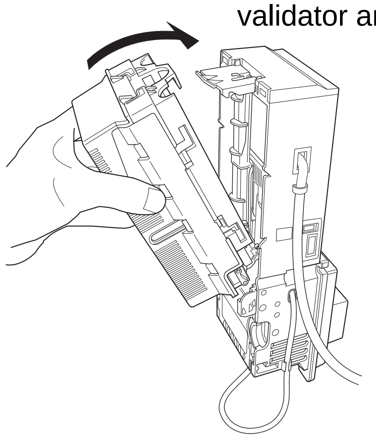




Remove Bills



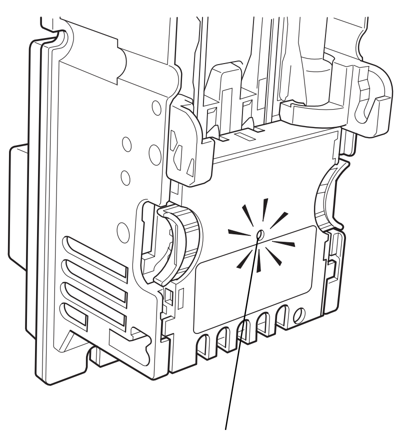
To Reinstall Stacker: Insert the bottom of the stacker box into the validator and close the stacker lid.



Warning: Be sure to reinstall the stacker into its original position!

4-5 Diagnostic L.E.D. Indication

A diagnostic L.E.D. is placed on the back of the validator. The L.E.D. indicates the status or abnormal condition of the bill validator.



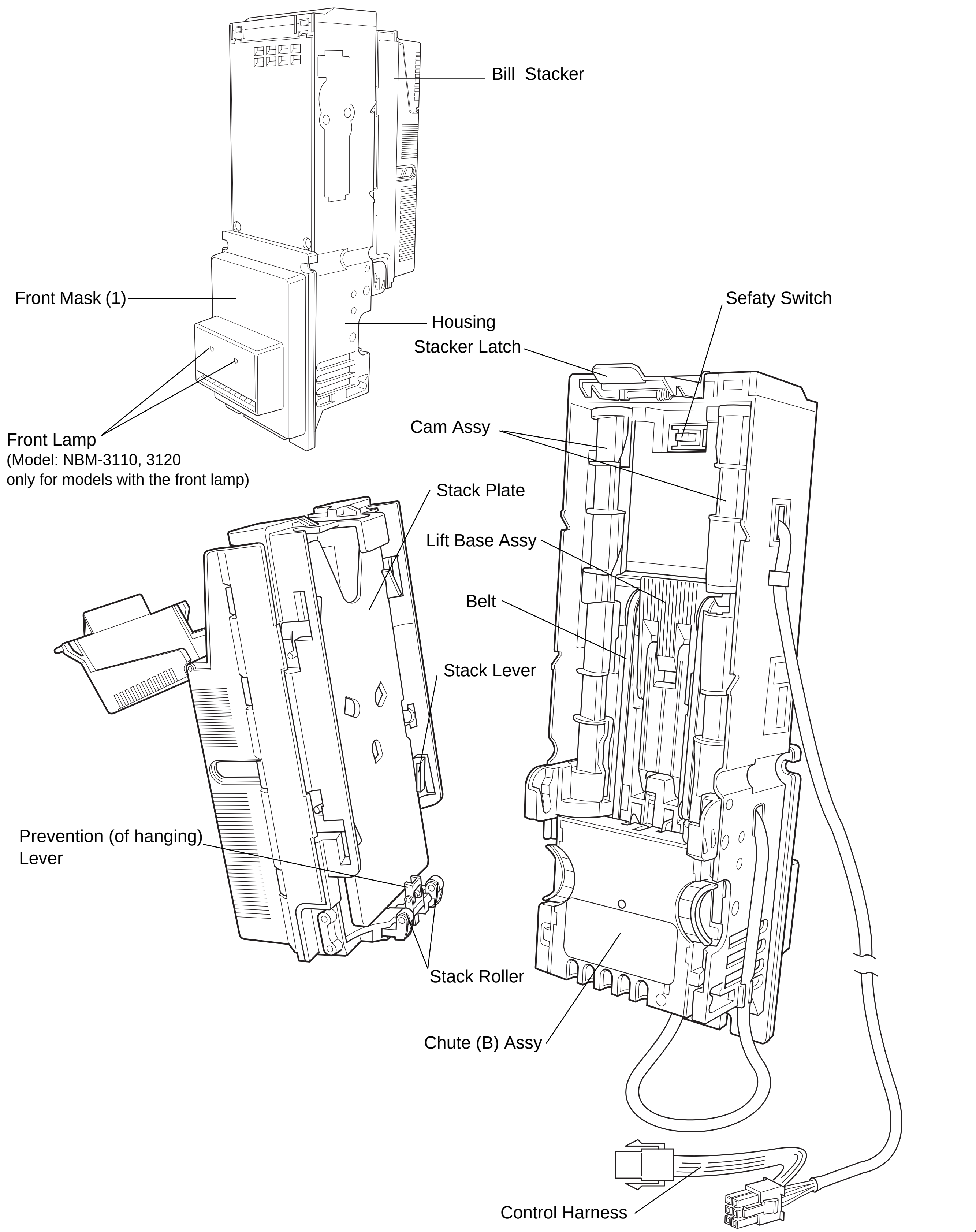
L.E.D. Diagnostics

L.E.D. Diagnostics

L.E.D. Mode	Bill validator status
OFF	No power
ON (steady)	Normal Operation
Single Flash	Stacker Full
Double Flash	Stacker Incorrectly Installed
Triple Flash	Cleaning of Sensors Require
Four Flash	Disabled from Controller
Five flashes or more	Disabled

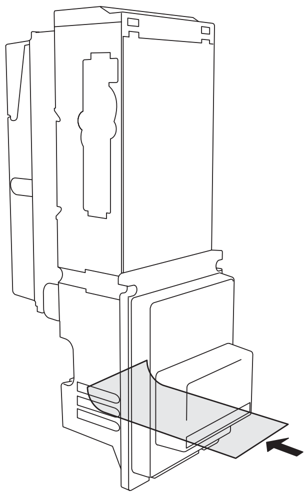
5. COMPONENT DESCRIPTION

5-1 Identification of Components

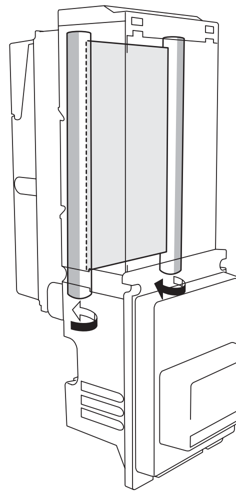


5-2 Bill Path and Operations

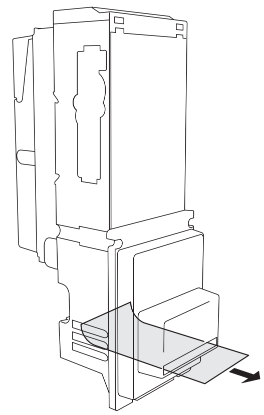
(1) When a bill is inserted into the opening face up either direction, the validator automatically draws the bill in for validation.

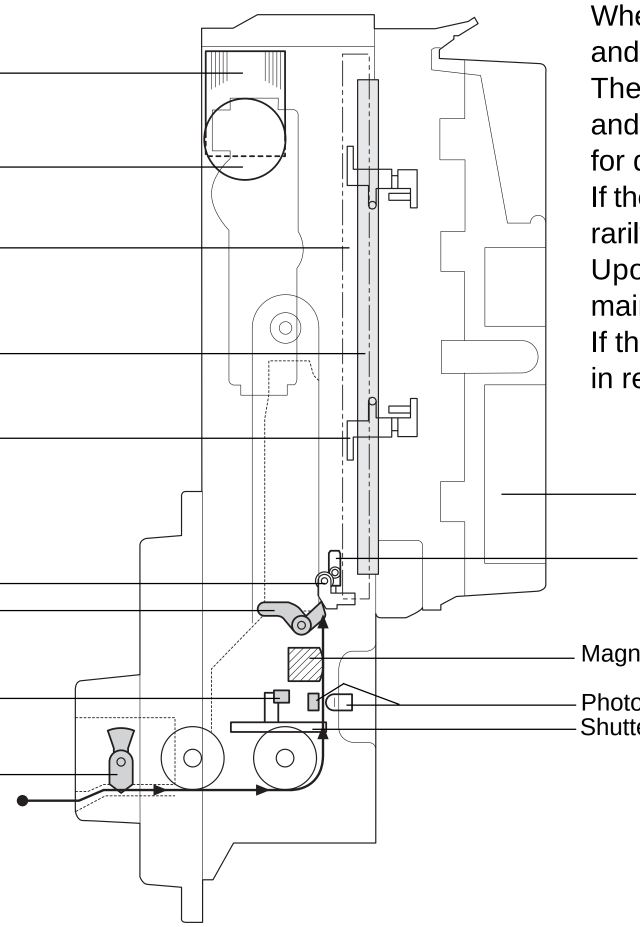


(2) If the bill is determined to be authentic, it is temporarily held in the escrow mode. Upon receving of the stack bill signal from the main controller, the bill is stacked.



(3) If the bill is found to be counterfeit, it will be returned automatically.





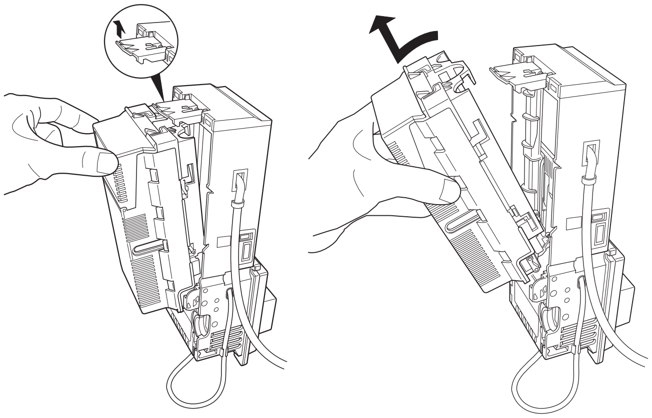
When a bill is inserted, the carrier motor rotates and the bill is drawn into the validator.
The information detected by the photo sensor and magnetic head is sent to the control board for discrimination.
If the bill is validated to be authentic, it is temporarily held in the escrow mode.
Upon receipt of the stack bill signal from the main controller, the bill is stacked.
If the bill is counterfeit the carrier motor rotates in reverse and returns the bill.

6. PREVENTIVE MAINTENANCE

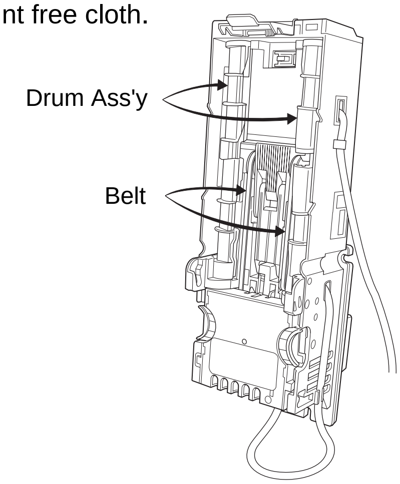
The validator bill path can become contaminated by dirty bills, dust, moisture or other foreign matter. If the L.E.D. flashes three times, the validator sensor has been heavily contaminated; clean the sensor. It is strongly recommended to clean the validator every one to three months depending on the amount of use or its environment.

*** Cleaning the Stacker**

(1) Lift the white latch upwards to open the stacker lid. Stacker box is now removable from the validator.



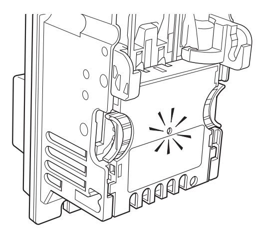
(2) Clean the stack drums and carrier belts with a soft lint free cloth.



*** NEVER use alcohol, benzene, thinner or anything of this nature for cleaning the carrier belt.**

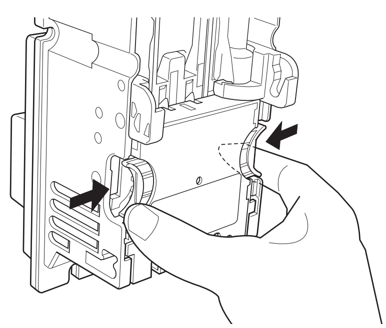
*** Flashing L.E.D.**

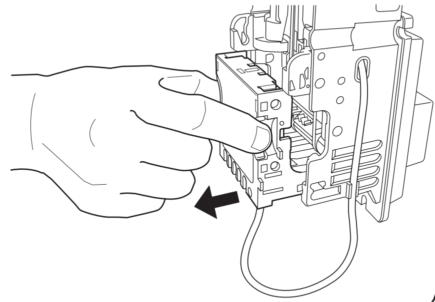
When the validator sensor needs to be cleaned, the L.E.D. flashes three times in succession. Cleaning should be done as shown below:

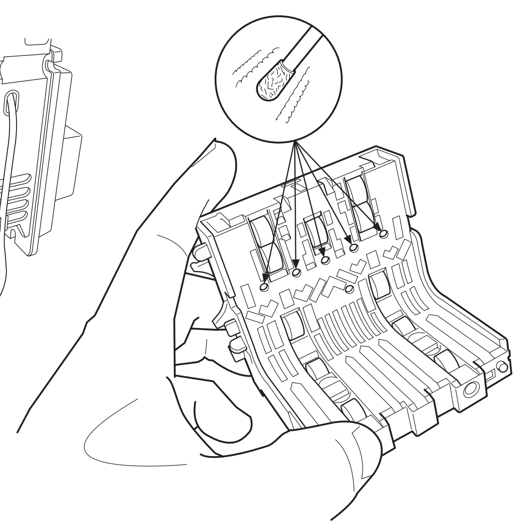


*** Opening of the Chute / Cleaning of the Bill Path**

Squeeze both latches inwards (as shown below) to open the chute.
Remove the chute by pulling upward and out (as shown below).



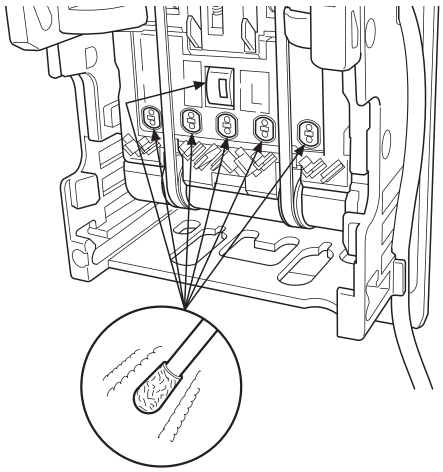




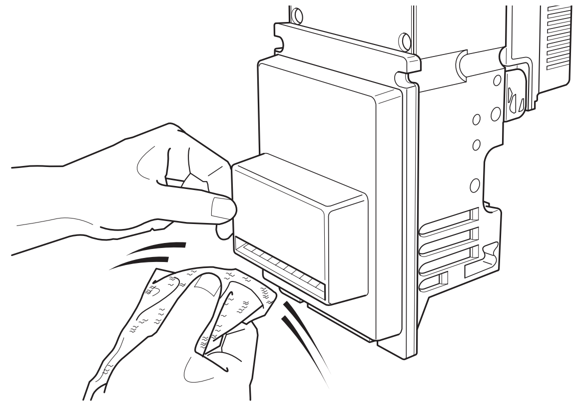
* Remove debris or foreign obstacles.
* Clean the magnetic and optical sensor sections with a cotton swab or soft cloth. Also, clean the carrier section including the chute, rollers and belts, using a soft cloth.

Reinstall the chute in reverse order.

* Clean the magnetic and optical sensors.



* Clean bill insertion opening.



*** NEVER use alcohol, benzene, thinner or anything of this nature for cleaning the carrier belt.**

7. Terminal Connection/Signal Conditions

7-1 Terminal Conditions

* 6-pin Connector

Receptacle Housing:	Molex 5557-06R
Socket Terminal:	Molex 5556T
Plug Housing :	Molex 5559-06P
Pin Terminal :	Molex 5558T

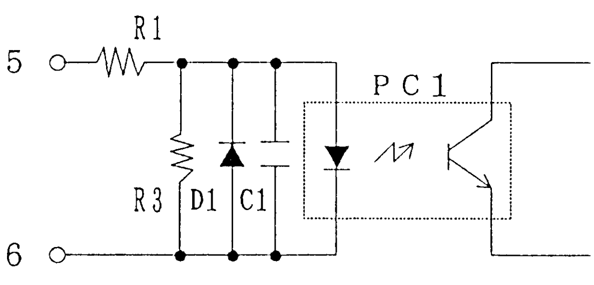
Terminal No.	Signal Name	Input/Output	Signal Conditions
1	Power Supply	Input	+ DC 34V (usually supplied)
2	Power Supply	Input	- DC 34V (usually supplied)
3	N. C.	——	——
4	Main Control Reception	Output	Transmission Data Output Signal.
5	Main Control Transmission	Input	Reception Data Input Signal.
6	Common Communications	Input	Common Transmission Line.

Note: Input/Output is relative to the Validator.

7-2 I/O Circuit

(1) Input Circuit

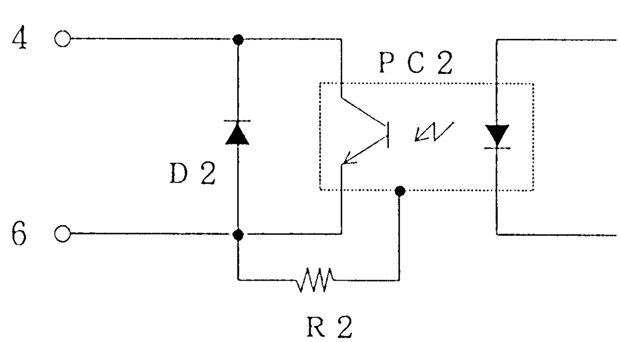
6P Connector



R1, R3 : 270 ohm
PC1 : Sharp PC702V3 or equivalent
D1 : Toshiba 1SS181 or equivalent
C1 : 2200pF

(2) Output Circuit

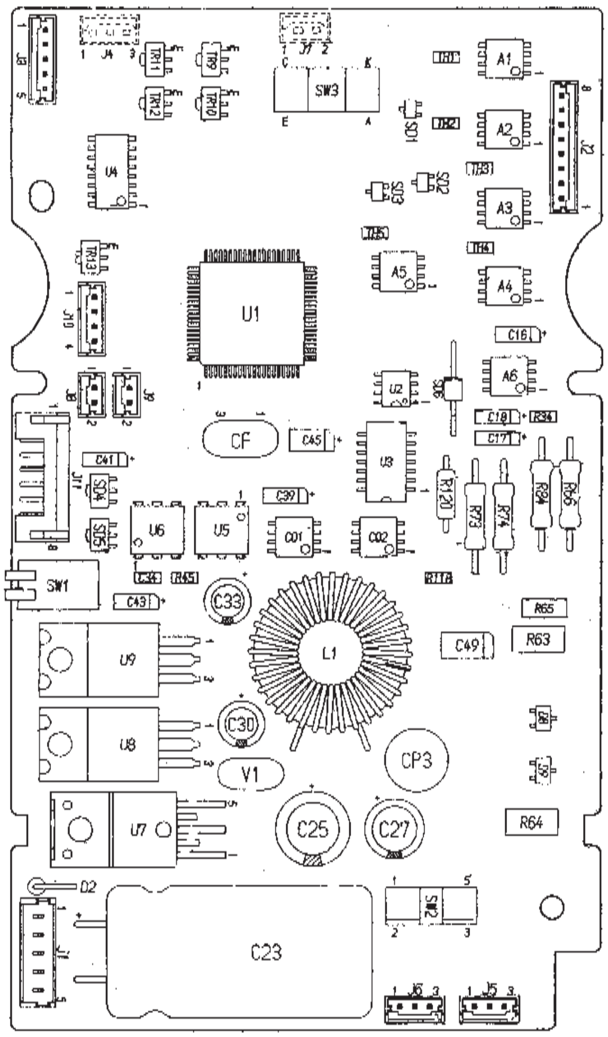
6P Connector



R2 : 470 ohm
PC2 : Sharp PC702V3 or equivalent
D2 : Toshiba 1SS181 or equivalent

8. CONNECTOR AND WIRING DIAGRAM

* SIGNALS



J1 5Pin Post

Pin No.	Wire Color	Input/ Output	Signal	Voltage Stand-by (V)	Voltage during Opration (V)
1	Red	Input	Power Supply 34 VDC	34	34
2	Black	Input	Power Supply GND	0	0
3	Green	Output	Main Control Reception	5	0
4	Blue	Input	Main Control Transmission	0	5
5	White	Input	Common Communications	0	0

J2 8Pin Post

1	White	Output	GND	0	0
2	White	Input	Magnetic head HD	5 (approx)	5 (approx)
3	White	Input	Light detector PXLS	5 (approx)	0
4	White	Input	Light detector PXL	5 (approx)	0
5	White	Input	Light detector PXC	5 (approx)	0
6	White	Input	Light detector PXR	5 (approx)	0
7	White	Input	Light detector PXRS	5 (approx)	0
8	Red	Output	+5 V	5	5

J3 5Pin Post

Pin No.	Wire Color	Input/ Output	Signal	Voltage Stand-by (V)	Voltage during Opration (V)
1	White	Output	+ 15V	15	15
2	White	Output	+ 12V	12	12
3	White	Input	Shutter sensor Close	5 (approx)	0
4	White	Input	Shutter sensor Open	5 (approx)	0
5	Red	Ouput	GND	0	0

J4 3Pin Post (non the front lamp)

1	Brown	Input	Entrance sensor P1RL emitting	1.2 (approx)	1.2 (approx)
2	Red	Input	Entrance sensor P1RL	5 (approx)	0
3	Orange	Output	GND	0	0

J5 3Pin Post

1	Brown	Output	Carrier motor (CW rotation)	15 (approx)	0
2	-	-	———	-	-
3	Orange	Output	Carrier motor (CCW rotation)	15 (approx)	0

J6 3Pin Post

1	Brown	Output	Stacker motor (CW rotation)	0	15 (approx)
2	-	-	———	-	-
3	Orange	Output	Stacker motor (CCW rotation)	0	0

J7 2Pin Post

1	Brown	Output	Shutter motor (CW rotation)	12 (approx)	0
2	Red	Output	Shutter motor (CCW rotation)	12 (approx)	0

J8 2Pin Post

1	Brown	Input	Carrier switch	5 (approx)	0
2	Red	Output	GND	0	0

J9 2Pin Post

1	Brown	Input	Safety switch	0	5 (approx)
2	Red	Output	GND	0	0

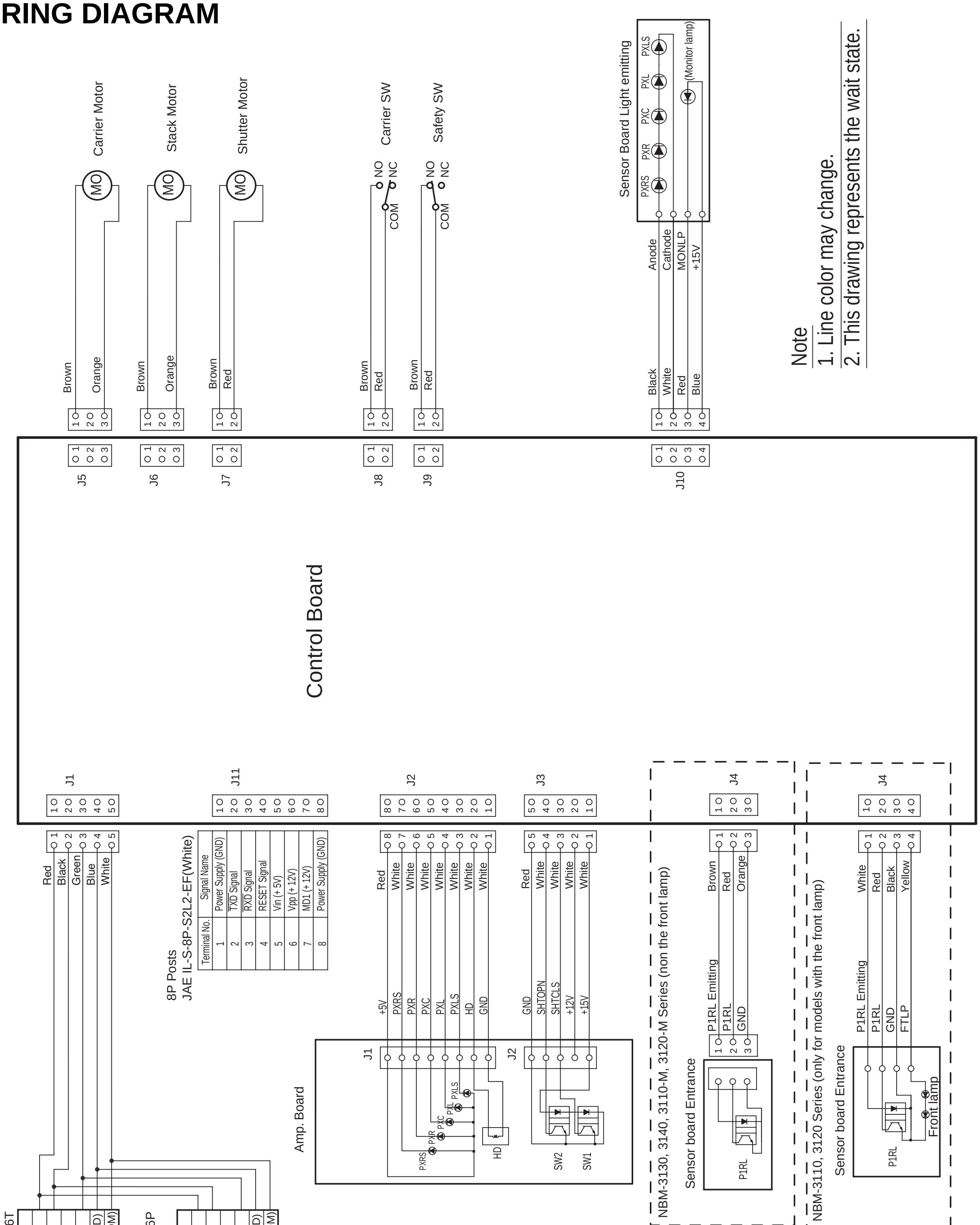
J10 4Pin Post

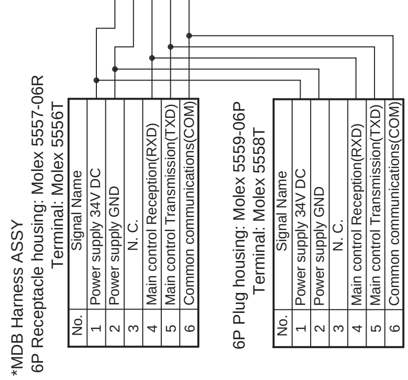
1	Black	Output	Emitting sensor (LED) Anode	6.0 (approx)	1.2 (approx)
2	White	Input	Emitting sensor (LED) Cathode	0	8.2 (approx)
3	Red	Input	Moniter lamp	0	13.2(approx)
4	Blue	Output	+ 15V	15	15

J11 8Pin Post

1	-	Output	Power Supply (GND)	0	0
2	-	Input	$\overline{TXD}$ Signal	5 (approx)	0
3	-	Input	$\overline{RXD}$ Signal	5 (approx)	0
4	-	Input	RESET Signal	0	5 (approx)
5	-	Input	Vin (+ 5V)	5	5
6	-	Input	Vpp (+ 12V)	12	12
7	-	Input	MD1 (+ 12V)	12	12
8	-	Output	Power Supply (GND)	0	0

* WIRING DIAGRAM



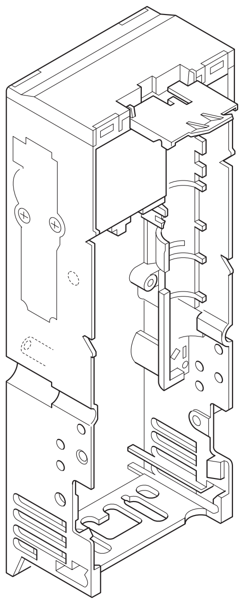


J4 3Pin Post (only for models with the front lamp)

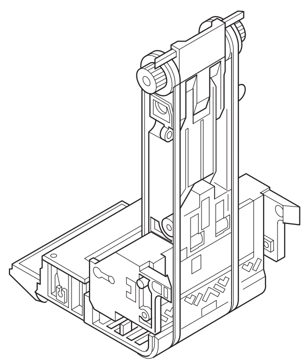
1	White	Input	Entrance sensor P1RL emitting	1.2 (approx)	1.2 (approx)
2	Red	Input	Entrance sensor P1RL	5 (approx)	0
3	Black	Output	GND	0	0
4	Yellow	Output	FTLP		

9. BILL VALIDATOR COMPONENTS

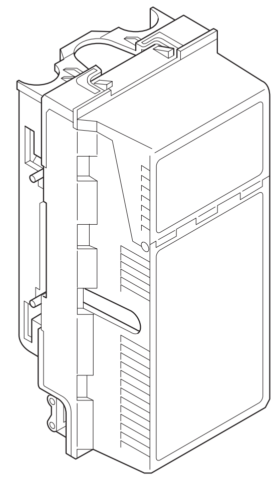
Housing Assy



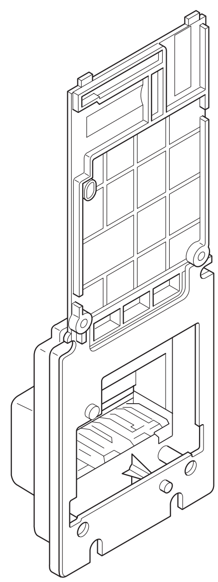
Lift Base Assy



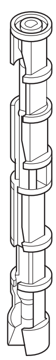
Stacker Box Assy



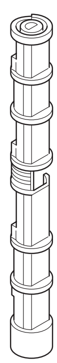
Front Mask Assy



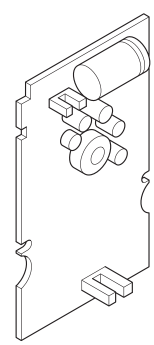
Drum Assy (R)



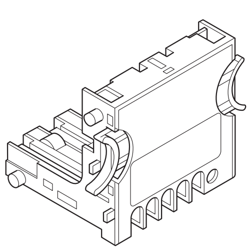
Drum Assy (L)



Control Board Assy



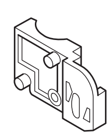
Chute (B) Assy



Drum Guide (R)

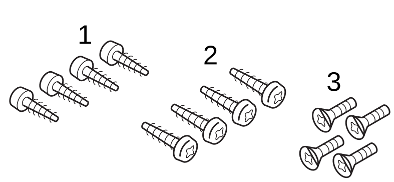


Drum Guide (L)



Output Bearing (1)





Screws

1. Self-Tapping Screw (+)Pan-head 3 x 8
2. Self-Tapping Screw (+)Pan-head 3 x 10
3. Self-Tapping Screw (+)Flush-head 3 x 8

10. DISASSEMBLY AND ASSEMBLY PROCEDURES

Disassembly the bill validator in the order written, reassembly in reverse order.

10-1Disassembly and Assembly of the Bill Validator Components

1. Stacker Box Assy

Removal:

1. Lift the white latch upward to open the stacker lid.
2. Stacker box is now removable from the validator.

Installation:

Reinsert the bottom of the stacker box into the validator and close the stacker lid.

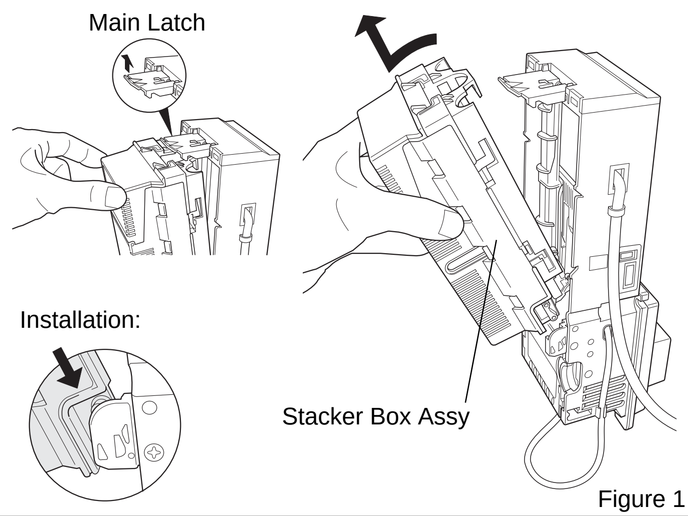


Figure 1

2. Chute (B) Assy

Removal:

1. Squeeze both latches inward to open the chute.
2. Pull the chute outward and remove.

Installation:

In reverse order.

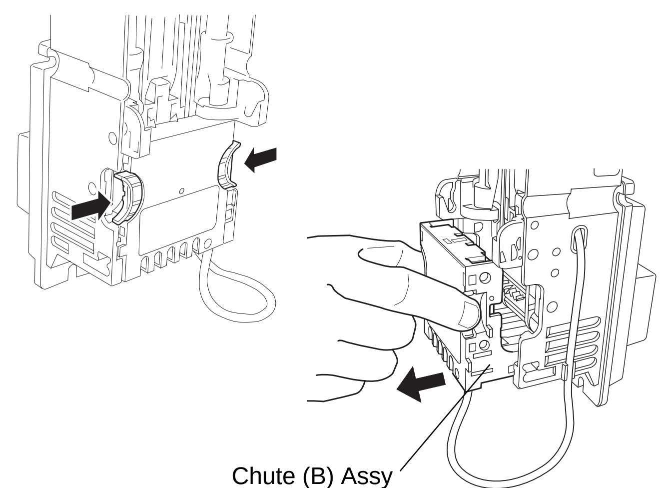


Figure 2

3. Front Mask Assy

Removal:

1. Remove the pan head tapping screws (M3x10).
2. Pull the front mask assembly toward you, slightly push it down and remove.

Installation:

In reverse order.

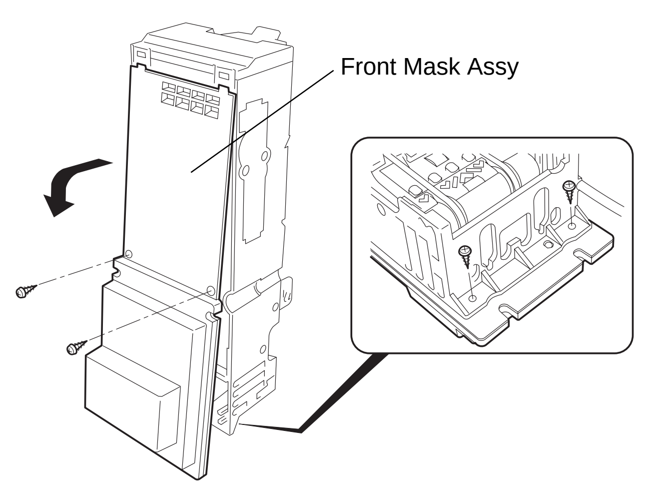


Figure 3

4. Control Board Assy

Removal:

1. Remove the two connectors from the back of the control board assy.
2. Unhook the four latches on the housing and pull the control board assy out toward you.
3. Remove the eight connectors from the front of the control board assy and remove the board.
4. Cut the harness tie wrap and remove the chute (B) harness assy.

Installation:

In reverse order.

Note: When reconnecting the connectors to the board, make sure they are fully inserted into the board. Failure to do so may cause malfunctions.

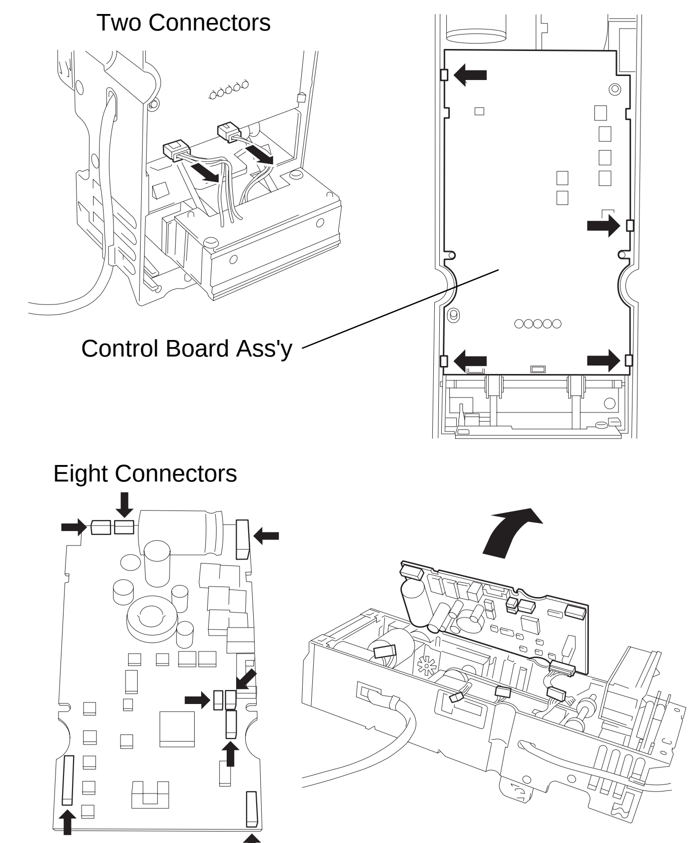


Figure 4

5. Drum Assy (R), (L) and Drum Guide (R), (L)

Removal:

1. Remove the flat-head tapping screws (M3x8) on both sides of the housing and two pan-head tapping screws (M3x8) inside of the housing.
2. Push the two alignment pins of the drum guides from the housing holes and remove them together with the drums. The alignment pins are firmly fitted in the housing, be careful when removing them.

Note: Be careful not to mistake the right drum (R) for the left drum (L) or vice versa.

Installation:

1. Position the drums on to the drum guides and insert the drums and drum guides onto the cam of the stack output shaft.
2. Install the drum guides by inserting the alignment pins into the housing.
3. Make sure the stacker lever is positioned inside each drum.

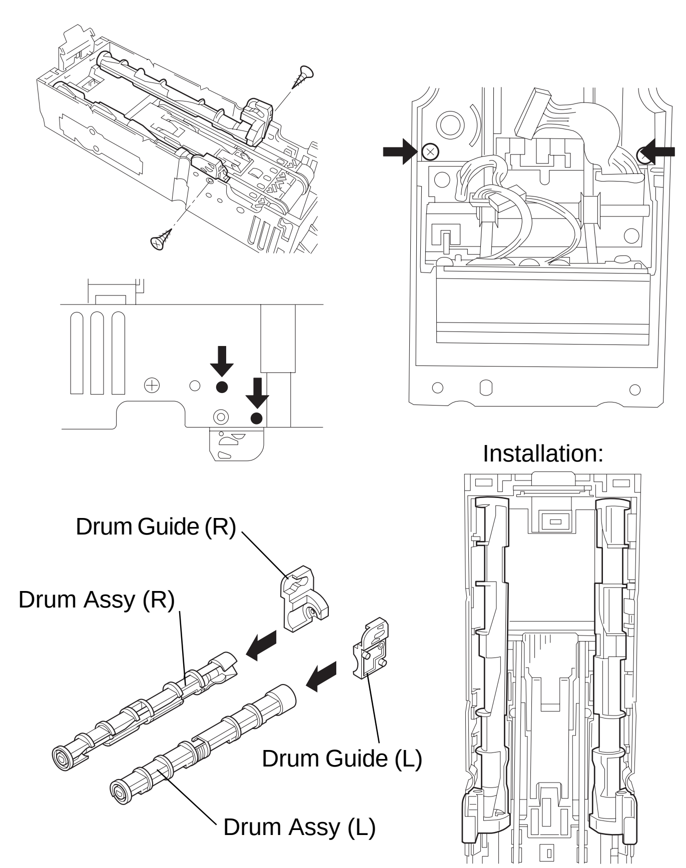


Figure 5

6. Lift Base Assy and Output Bearing (1)

Removal:

1. Remove the two flat head tapping screws (M3x8) from both sides of the housing and two pan-head tapping screws (M3x8) on the lift base.
2. Pull out the bottom of the lift base assy toward you or to the stack side of the housing. The belts on the lift base assy may be hooked on the mountig posts; unhook the belt.
3. When pulling out the lift base assy to the position as shown in Figure 6, hold the gear section and remove the right side of the assembly first. Pull the left side out (that is engaged with the left output shaft) toward you. The output bearing (1) located on the left side needs to be removed together with the lift base.

Note: When pulling out the bottom of the lift base assy toward you, be sure not to pull it up excessively or the engaging gears may be damaged.

Installation:

1. Assemble the output bearing (1) onto the left side of the output shaft on the lift base assy. Insert the left side together with the bearing into the housing.
2. Insert the right side of the lift base output shaft into the housing. Unhook the belts from under the mounting post on the back side of the housing.
3. Insert the bottom of the lift base assy into the housing by spreading the sides of the housing.
4. Install the two pan-head tapping screws (M3x8) to the lift base and the two flat-head tapping screws (M3x8) onto the sides of the housing.

Note: When installing the lift base assy, be careful not to let the output bearing (1) and the idling roller slip off. Also make sure to unhook the belts from the mounting post before inserting the assembly. Failure to do so may result in damage to the belts.

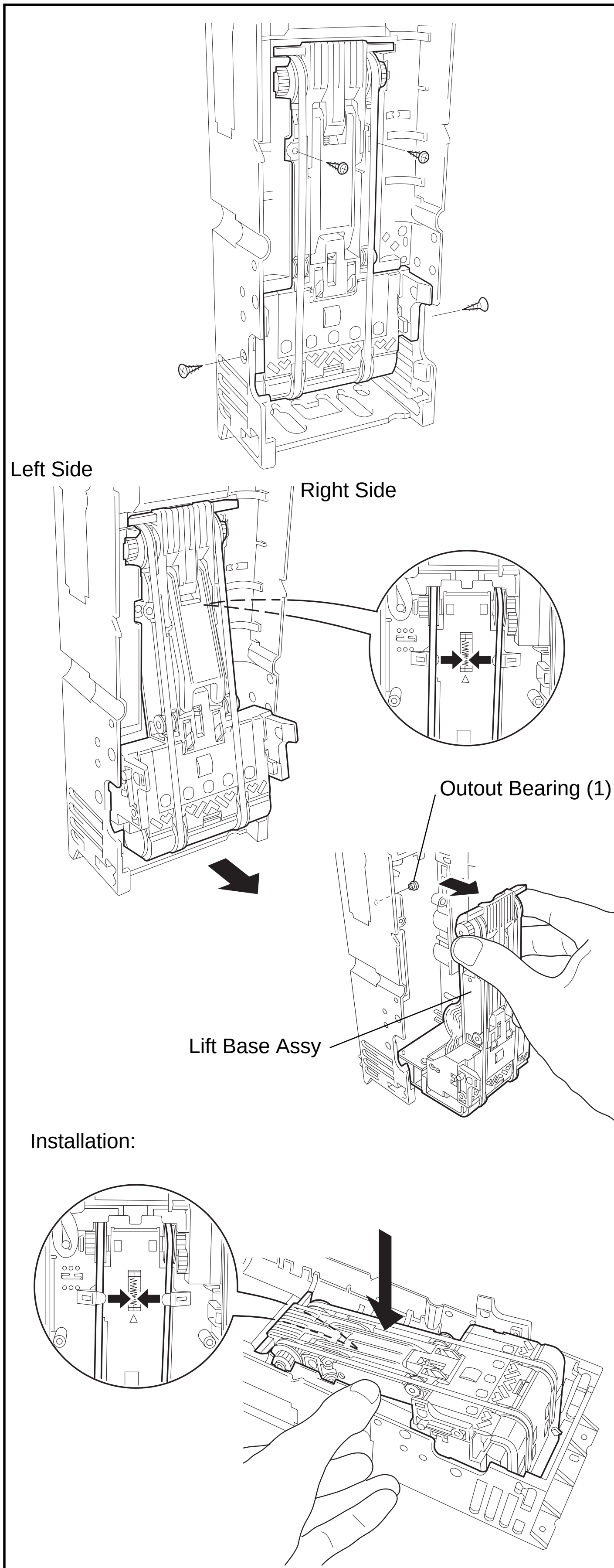


Figure 6

10-2 Disassembly and Assembly of the Housing

1. Carrier Gear Cover

Removal:

1. Remove the two flat head tapping screws (M3x8) from the carrier gear cover.
2. Unlatch the two tabs inside the housing with a flat-head screwdriver and remove the cover.

Installation:

In reverse order.

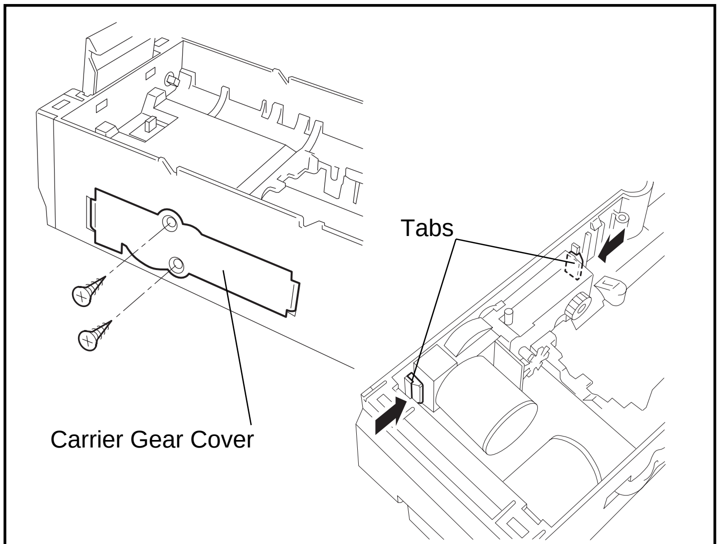


Figure 1

2. Carrier Gears, Bearings, and Pulse Shaft Assy

Removal:

The carrier gears, bearings and pulse shaft assembly can be disassembled as shown in Figure 2.

Note: When removing the gears inserted into the shaft, take care not to damage them.

Installation:

When assembling, be careful not to damage the gears or forget their positions.

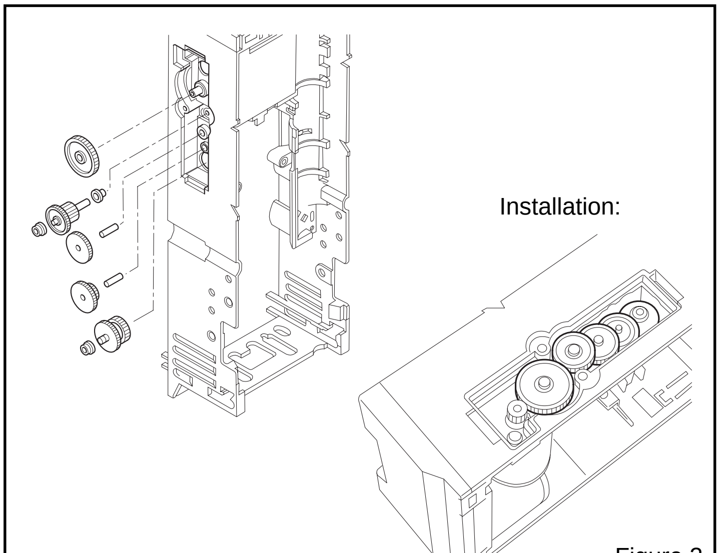


Figure 2

3. Carrier Motor and Harness Assy

Removal:

1. Remove the two pan-head screws (M3x4).
2. Remove the carrier motor and harness assembly.

Installation:

In reverse order.

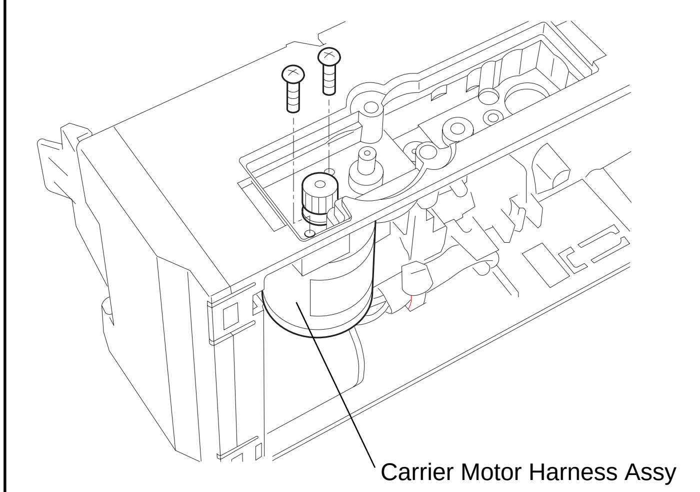


Figure 3

4. Stack Gear Cover

Removal:

1. Unlatch the two tabs on the stack side of the housing.
2. Pull upward and remove the cover.

Installation:

1. Latch the two tabs (on the front side) of the housing.
2. Push the cover in place.

Note: Be careful not to pry the tabs aggressively.

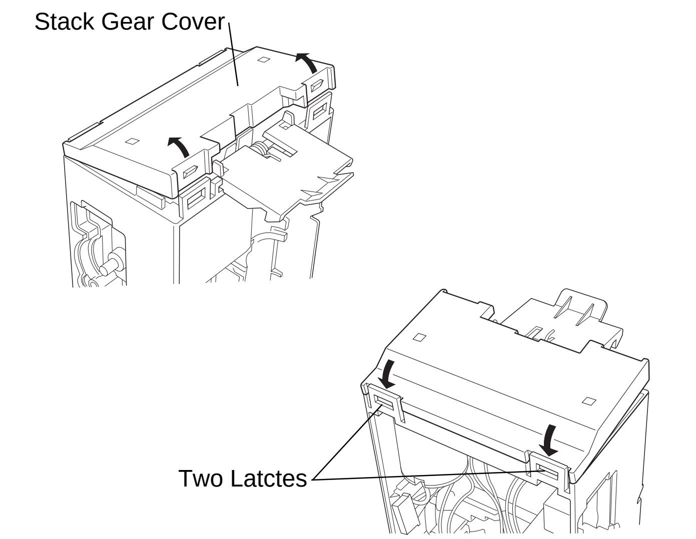


Figure 4

5. Stack Gears and Shaft

Removal:

The gears and shaft can be disassembled as shown in Figure 5.

Note: When removing the gears from the shaft, be careful not to damage them. Please pay close attention to the position of the stack output gears.

Installation:

When installing the gears, the cam shaft of the two stack output gears should be oriented in the same position as they were prior to removal.

Note: If the cam shafts are not positioned correctly, the drum assemblies (R) and (L) cannot be installed.

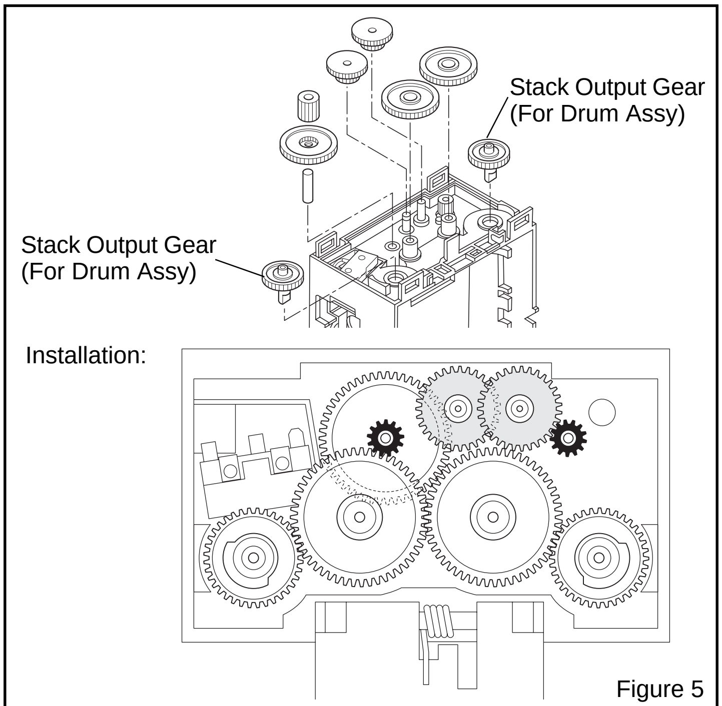


Figure 5

6. Stack Motor and Harness Assy

Removal:

1. Remove the two pan-head screws (M3x4) from the stacker motor.
2. Remove the stack motor and harness assy.

Installation:

In reverse order.

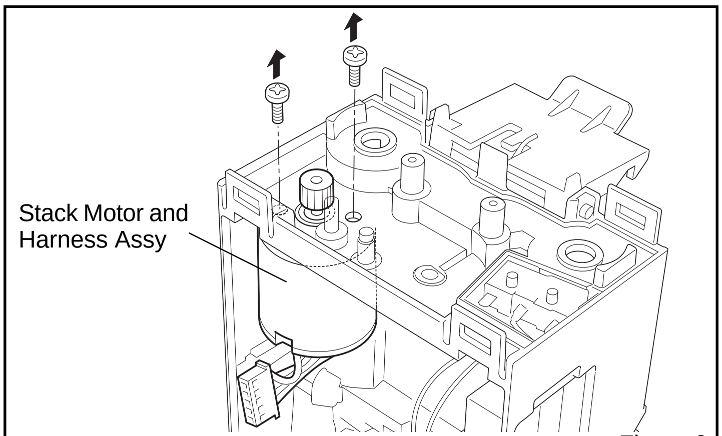


Figure 6

7. Main Latch, Shaft and Spring

Removal:

1. Pull the shaft out by pressing one side.
2. Remove the stacker latch, shaft and spring.

Note: The spring is under tension, be careful during disassembly and assembly.

Installation:

In reverse order.

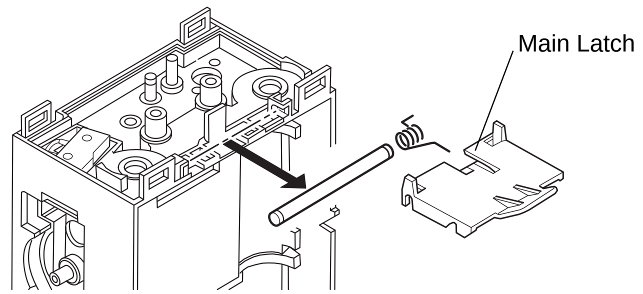


Figure 7

8. Carrier Switch and Harness Assy

Removal:

1. Remove the harness from the housing.
2. Pull the switch assy upward toward you and remove.

Installation:

In reverse order.

Note: Be sure to route the harness as it was prior to removal.

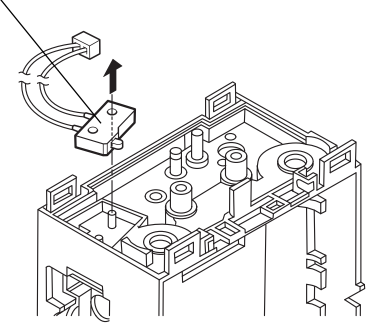


Figure 8

9. Safety Switch and Harness Assy

Removal:

1. Remove the harness from the housing.
2. Unhook the right and left latches and pull the switch toward you.

Installation:

In reverse order.

Note: Be sure to route the harness as it was prior to removal.

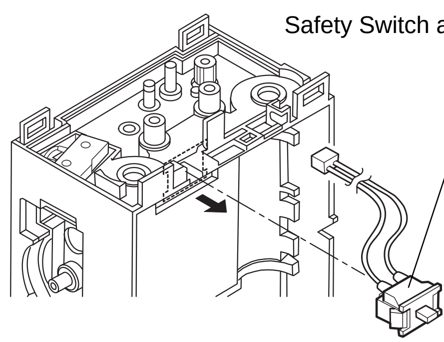


Figure 9

10. M.D.B. Harness Assy

Removal:

Cut the harness tie wrap from the M.D.B. Harness Assy and the housing.

Installation:

Reinstall the M.D.B. Harness Assy back into place, and fasten the harness with the tie wrap as illustrated in Figure 10.

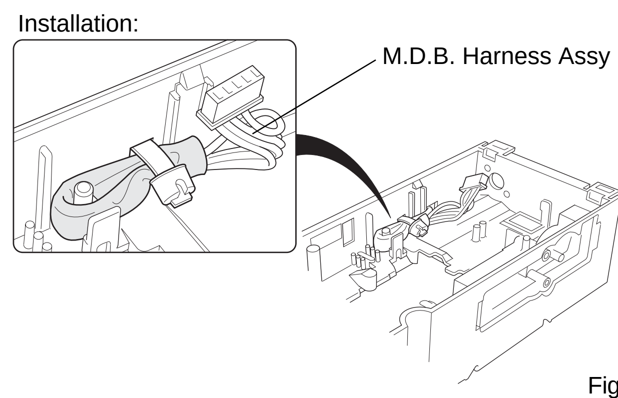


Figure 10

10-3Disassembly and Assembly of the Chute (B) Assy

1. Chute (B) Cover

Removal:

1. Unhook the four latches on the back of the chute (B).
2. Slide the whole cover toward you and unhook the lower two latches to remove the cover.

Installation:

In reverse order.

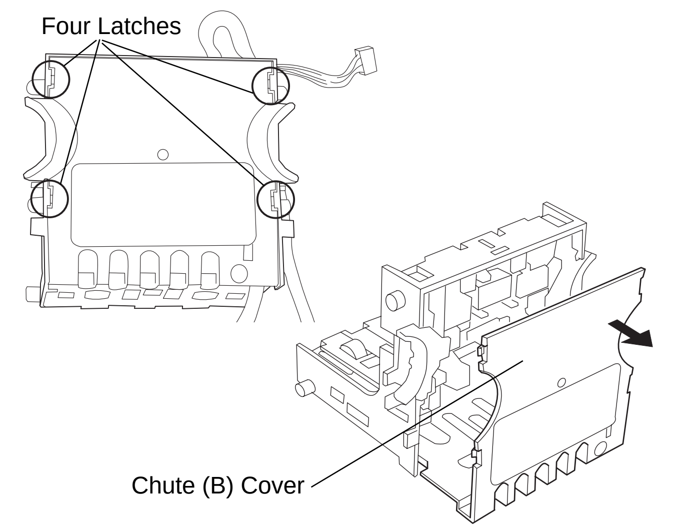


Figure 1

2. Chute (B) Latch and Spring

Removal:

1. Remove the right and left ends of the spring from the chute (B) latches.
2. Remove the latches.

Installation:

In reverse order.

Note:
Install the components in the reverse order of the removal procedure.

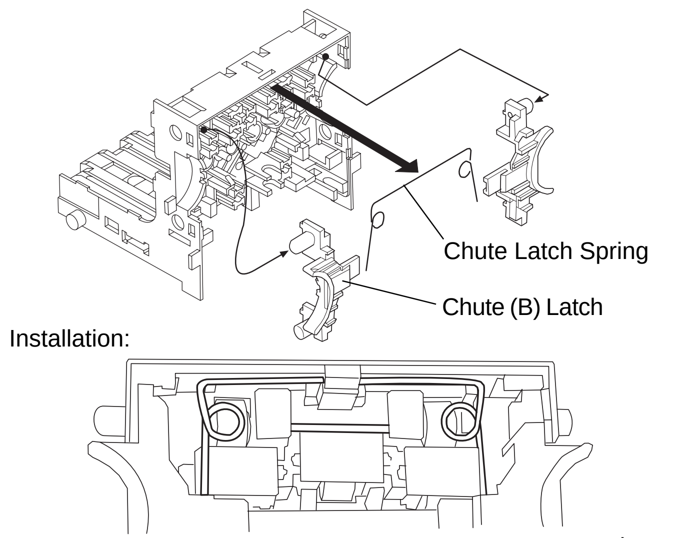


Figure 2

3. PX L.E.D. Board Assy

Removal:

1. Unhook the four latches on the board.
2. Cut the tie wrap and remove the PX L.E.D. board assy.

Installation:

In reverse order.

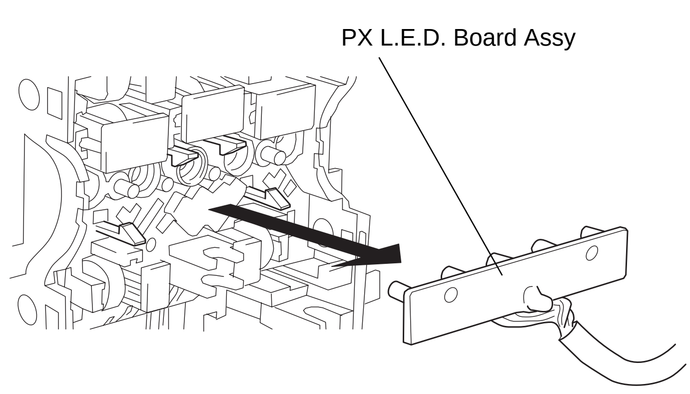


Figure 3

4. Rollers, Brackets, Shafts and Springs

Removal:

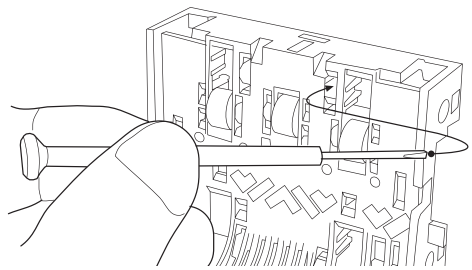
1. Unhook the two latches on the first-roller-brackets by inserting a small screwdriver.
2. Remove the rollers, springs and shafts of the first-roller-brackets.
3. Unhook the four latches on the second-roller-brackets by inserting a small screwdriver from the opposite side.
4. Remove the rollers, springs and shafts of the second-roller-brackets.
5. Remove the end of the carrier roller spring from the guide gutter and unlatch the convex part. The spring can now be removed.
6. Remove the carrier roller and shaft.
7. Confirm that the disassembled rollers, brackets, shafts and springs are as shown in Figure 4.

Installation:

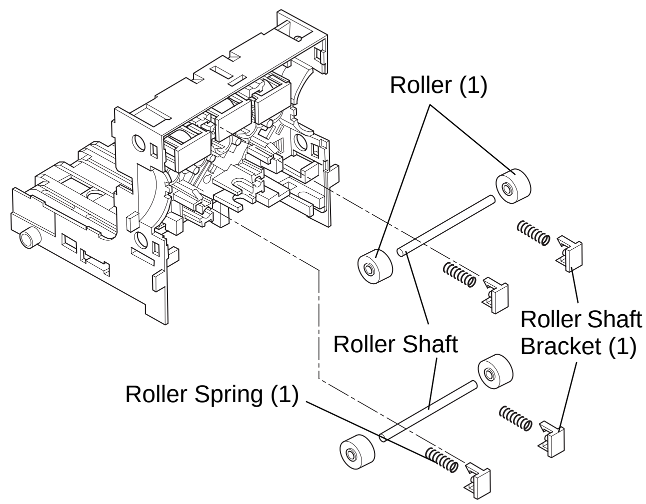
Install the components in the reverse order of the removal procedure by referring to Figure 4.

Note:

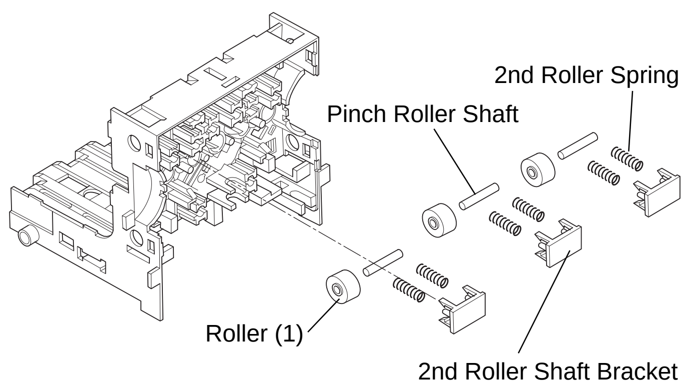
1. **Special care should be taken with the springs as they may have different strengths even if their shapes are the same. DO NOT MIX THE SPRINGS!**
2. **Be sure to replace the carrier roller springs as they were prior to removal.**
3. **If the springs are wrongly oriented, the validator may not perform correctly. Take notice of the proper posistion of each part. DO NOT MIX THEIR LOCATION!**



Roller Shaft, Roller (1), Roller Spring (1), Roller Shaft Bracket (1)



Pinch Roller Shaft, Roller (1), 2nd Roller Spring, 2nd Roller Shaft Bracket



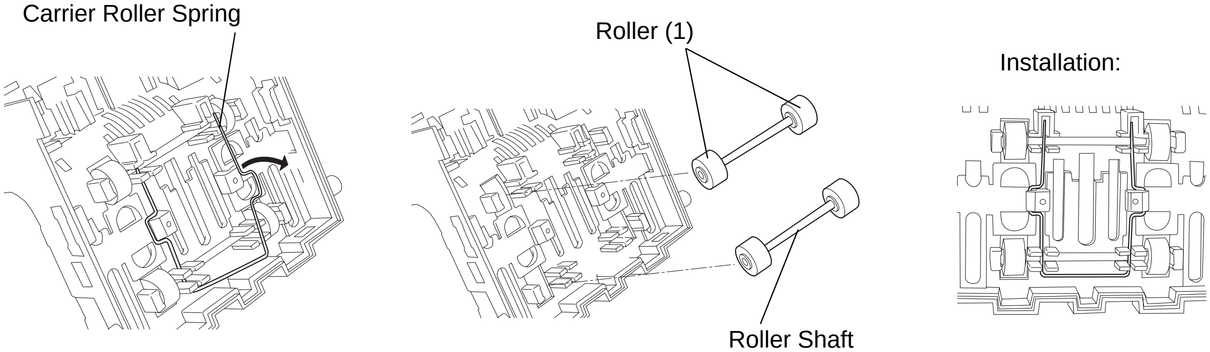


Figure 4

10-4Disassembly and Assembly of the Staker Box

1. Stacker and Stacker Box (Upper or Lower)

Removal:

1. Unhook the right and left stacker latches on the top. Insert a flat-head screwdriver into the mating surface of the box to open the surface.
2. Disassemble he stacker box guide from the stacker box.

Note:

Do not apply excessive force to separate the stacker box from the stacker guide.

Installation:

1. Mate the stacker with the stacker box guide.
2. Assemble them back into place.

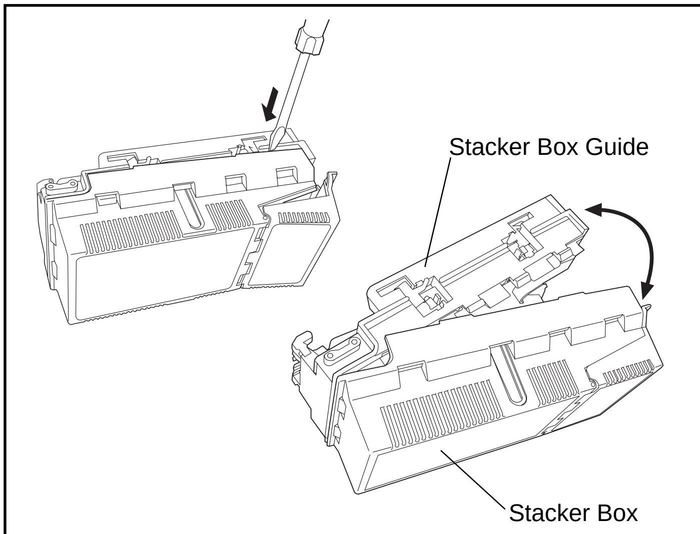


Figure 1

2. Stack Plate, Stacker Box and Pressure Spring

Removal:

1. Unhook the latch on the spring and remove the plate and spring.

Installation:

In reverse order.

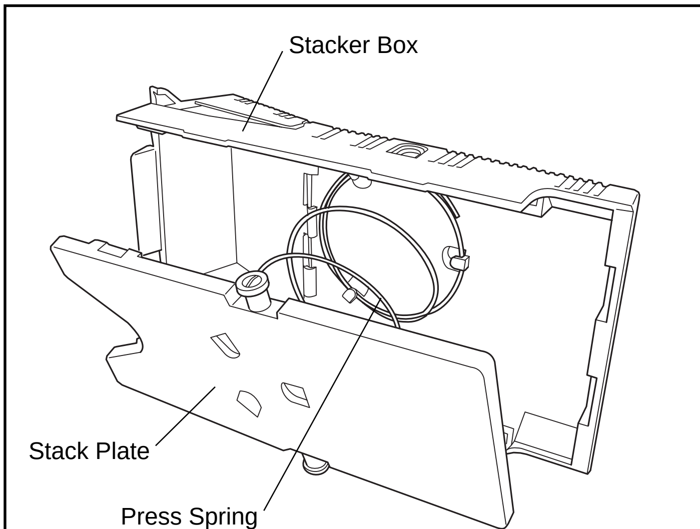


Figure 2

3. Stack Levers and Spring

Removal:

1. Unhook the latch shown in Figure 3 with a flat-head screwdriver.
2. Pull the lever upward toward you, unhook the latch on the other side and remove the spring.

Installation:

1. Install the spring onto the stack lever and hook the end of the spring into the slot. Now push the stack lever into the hole.
2. Push the other end of stack lever into the other hole.

Note:

Be careful not to mistake the right side (R) for the left side (L) or vice versa when installing the lever and the spring.

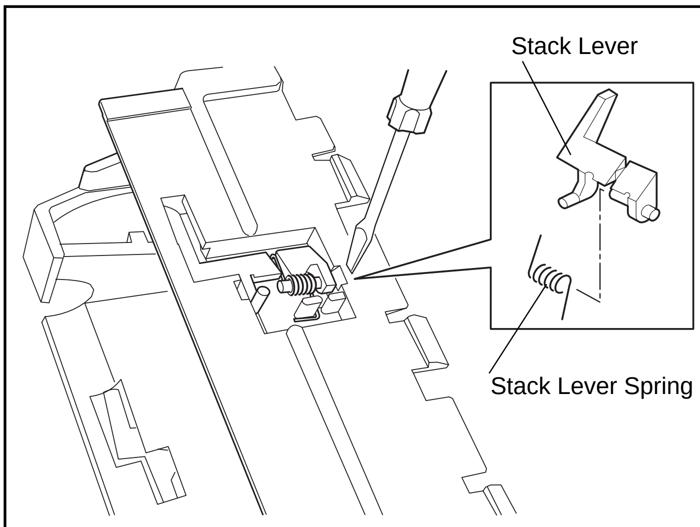


Figure 3

4. Stack Cover, Roller, Bracket, Prevention (of hanging) Lever and Spring

Removal:

1. Unhook the two latches in front of the stack cover with a flat-head screwdriver.
2. Unhook the four latches while lifting the stacker cover toward you.
3. Remove the cover and then individual parts as shown in Figure 4.

Installation:

In reverse order.

Note:
Individual parts are small, be careful not to lose or damage them.

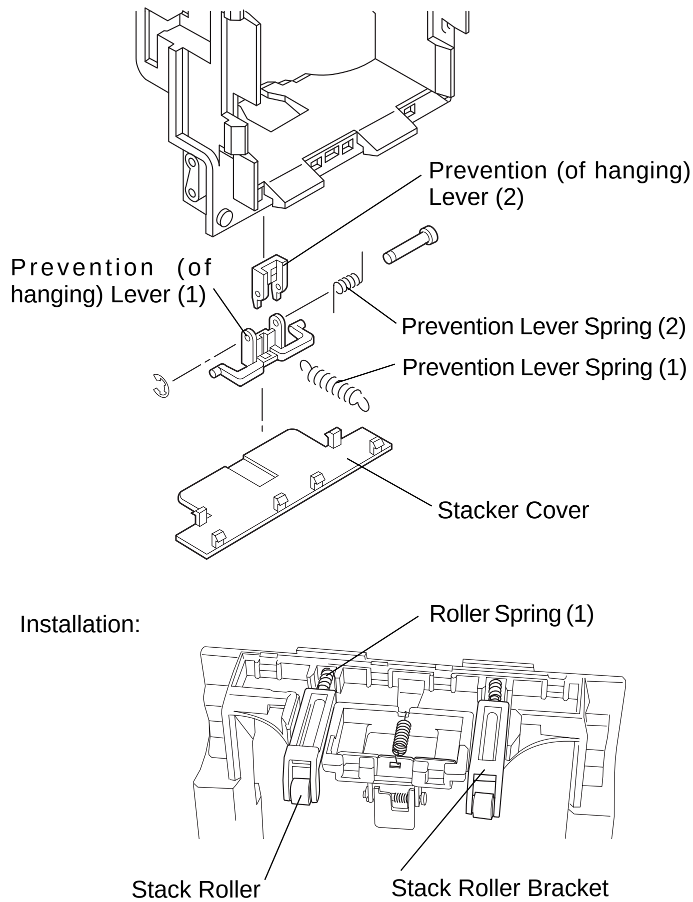


Figure 4

10-5 Disassembly and Assembly of the Front Mask Assy

Removal:

1. Remove the pan-head tapping screw (M3x8).
2. Remove the mask from the metal mask base.

Installation:

In reverse order.

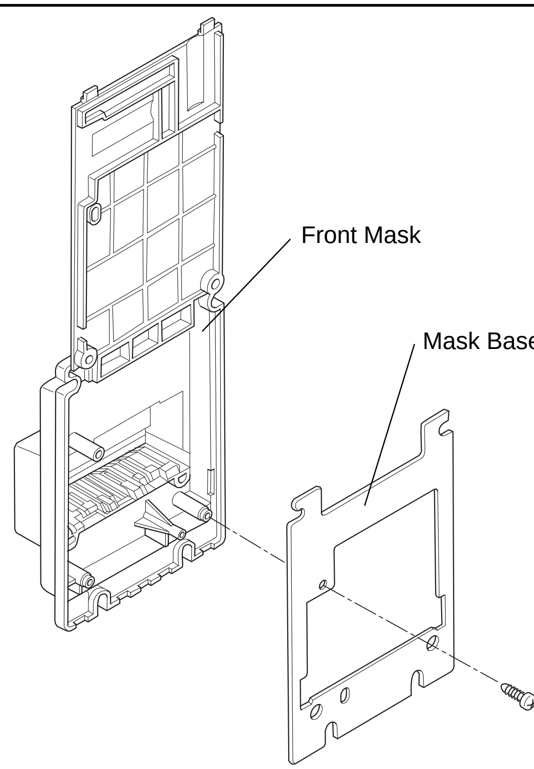


Figure 1

10-6Disassembly and Assembly of the Lift Base Assy

1. Mask Chute (Upper) Assy

Removal:

Unhook the two latches with a flat-head screwdriver and pull the upper mask chute assembly toward you.

Installation:

In reverse order.

(1) Inlet Sensor Board Assy

Removal:

Remove the two flat-head tapping screws (M3x8).

(2) Inlet Lever, Shaft and Spring

Removal:

1. Remove the shaft from the chute with a flat-head screwdriver.
2. Remove the inlet levers and springs from the shaft.

Installation:

Assemble the lever and spring onto the shaft and install them into the chute.

Note:
Adjust the position of the springs so that the inlet levers move smoothly. Do not increase spring tension.

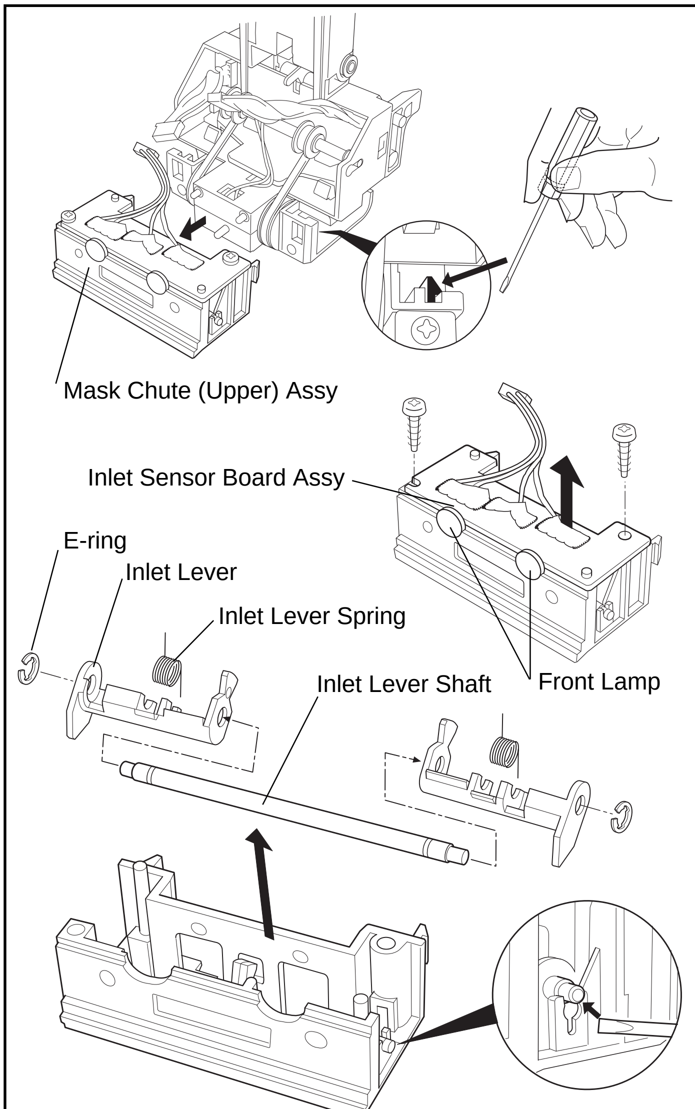


Figure 1

2. Idler, Shaft, Springs and Belts

Removal:

1. Grip the springs with a pair of pliers and remove then from the shaft. Do not overextend the springs.
2. Spread the lift base housing case apart just enough to remove the shaft and idlers. Do not over stretch the case.
3. Remove the shaft and belts.
4. Remove the E-rings to remove the idlers.

Installation:

In reverse order.

Note:
The spring need to be removed when the head bracket assy is removed. Do not over stretch the springs.

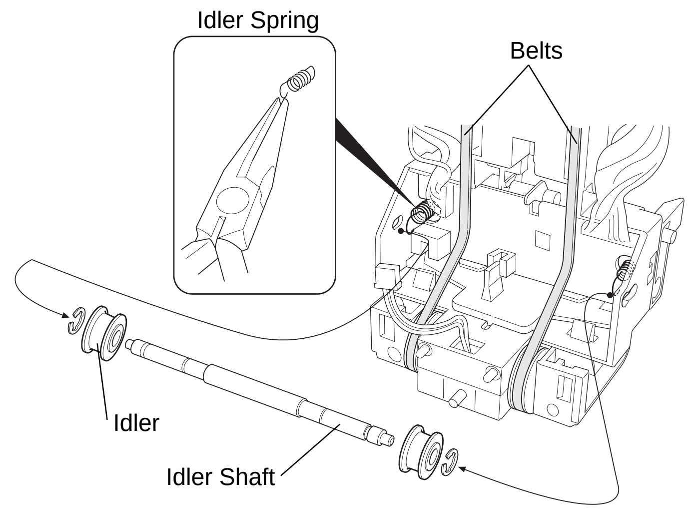


Figure 2

3. Chute (A), Shutter Motor Assy, Shutter Gears and Carrier Pulley Assy

Removal:

1. Unhook the two latches and pull the chute (A) down.
2. Remove the two carrier pulleys and two shutter gears. Note their positions prior to removal.
3. Unhook the four latches on the shutter motor assy and pull out the assembly.

Installation:

In reverse order.

Note:

The shutter gears should be oriented in the same position as prior to their removal.

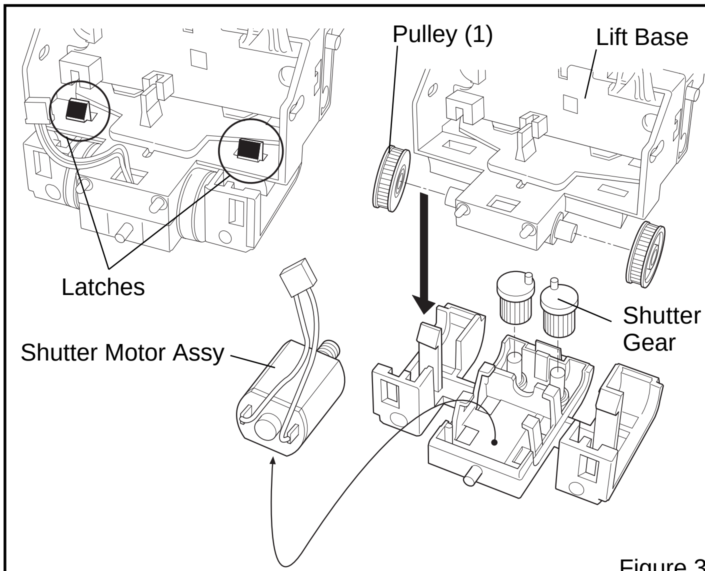


Figure 3

4. Head Bracket Assy, Shutter and Carrier Pulley Assy

Removal:

1. Remove the two pan-head tapping screws (M3x8).
2. Remove the head bracket assy.
3. Remove the shutter and two carrier pulleys.

Installation:

In reverse order.

Note:

Be sure to install the carrier pulleys prior to installing the shutter.

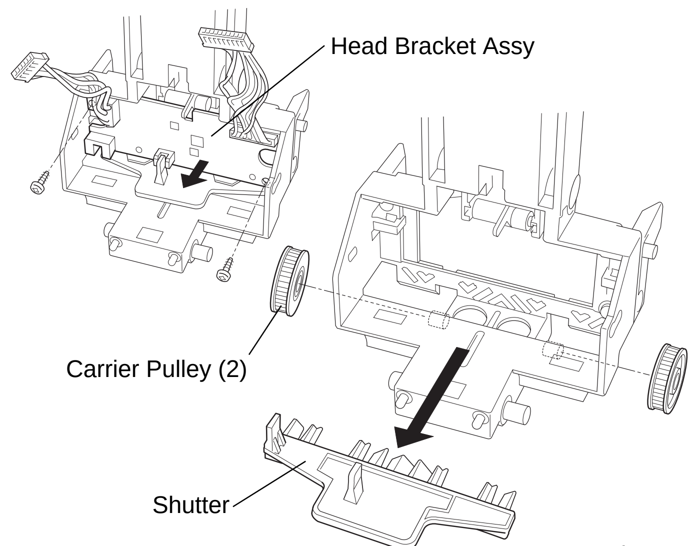


Figure 4

5. P2 Lever, Shaft and Spring

Removal:

1. Push the end of the shaft with a thin blade screwdriver first and remove the shaft.
2. Remove the P2 lever and the spring.

Installation:

In reverse order.

Note:

Do not increase spring tension.

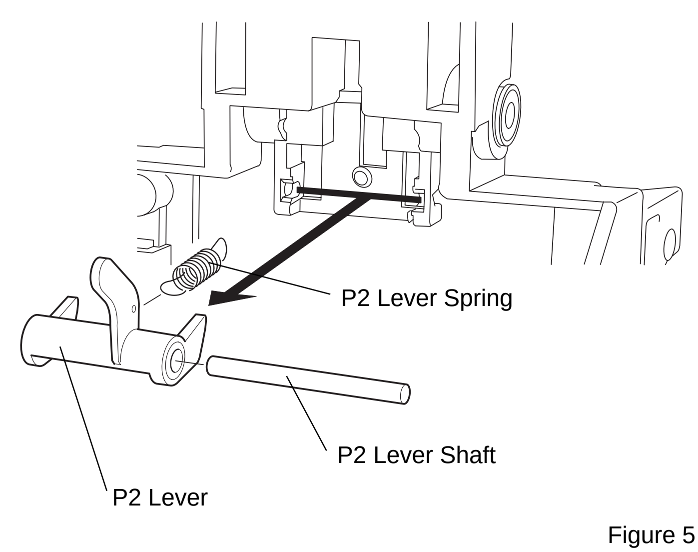


Figure 5

6. Stacker Chute, Stacker Lever, Drive Shaft, Carrier Pulley (1) Assy, Stacker Chute Spring, Drive Bearing (2) and Idler Shaft

Removal:

1. Pull he carrier pulley (1) assy off of the drive shaft.
2. Remove the drive bearings (2) and shaft.
3. Push the end of the lift base shaft (2) with a thin blade screwdriver and remove the shaft.
4. Remove the E-ring and pull out the lift base shaft (1).
5. Remove the stacker chute spring.
6. Remove the stacker chute and stacker lever.

Installation:

1. Assemble the stacker lever to the stacker chute, and then insert the shaft before installing the E-ring.
2. Hook the stacker chute spring onto the shaft.
3. Install them into the lift base and insert the lift base shaft.
   Align the shaft groove with the latch on the lift base.
4. Assemble the carrier pulley (1) assy and bearing to one side of the drive shaft before inserting them into the lift base. Then install the bearing and the carrier pulley (1) to the other side.
5. Hook the stacker chute spring onto the spring tab of the lift base.

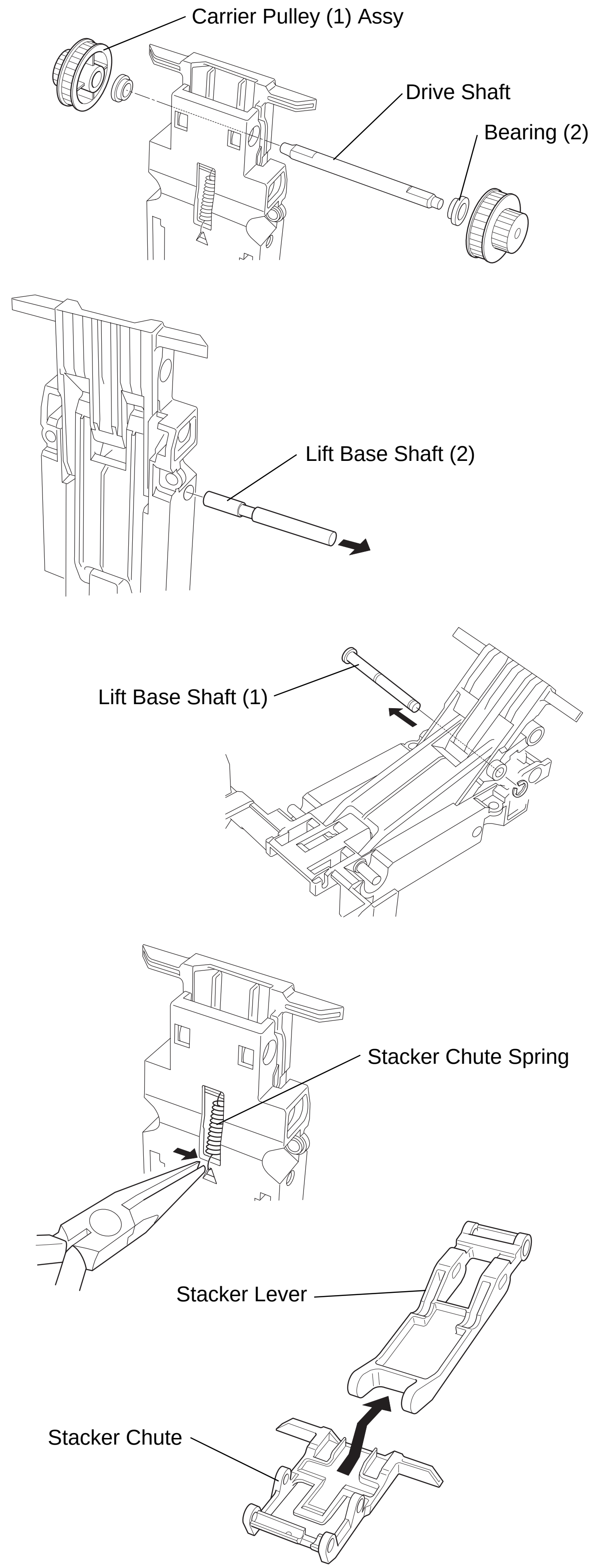
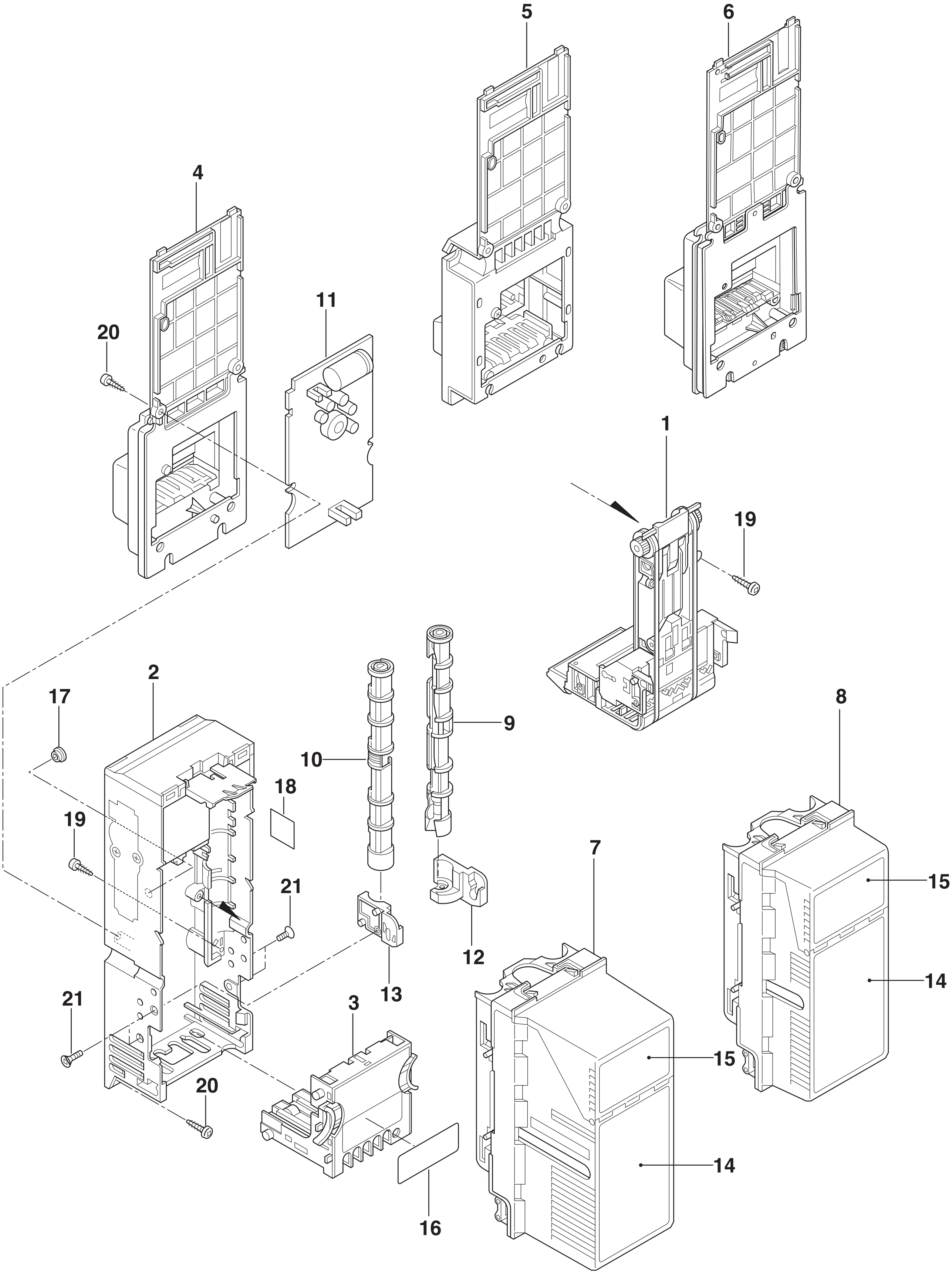


Figure 6

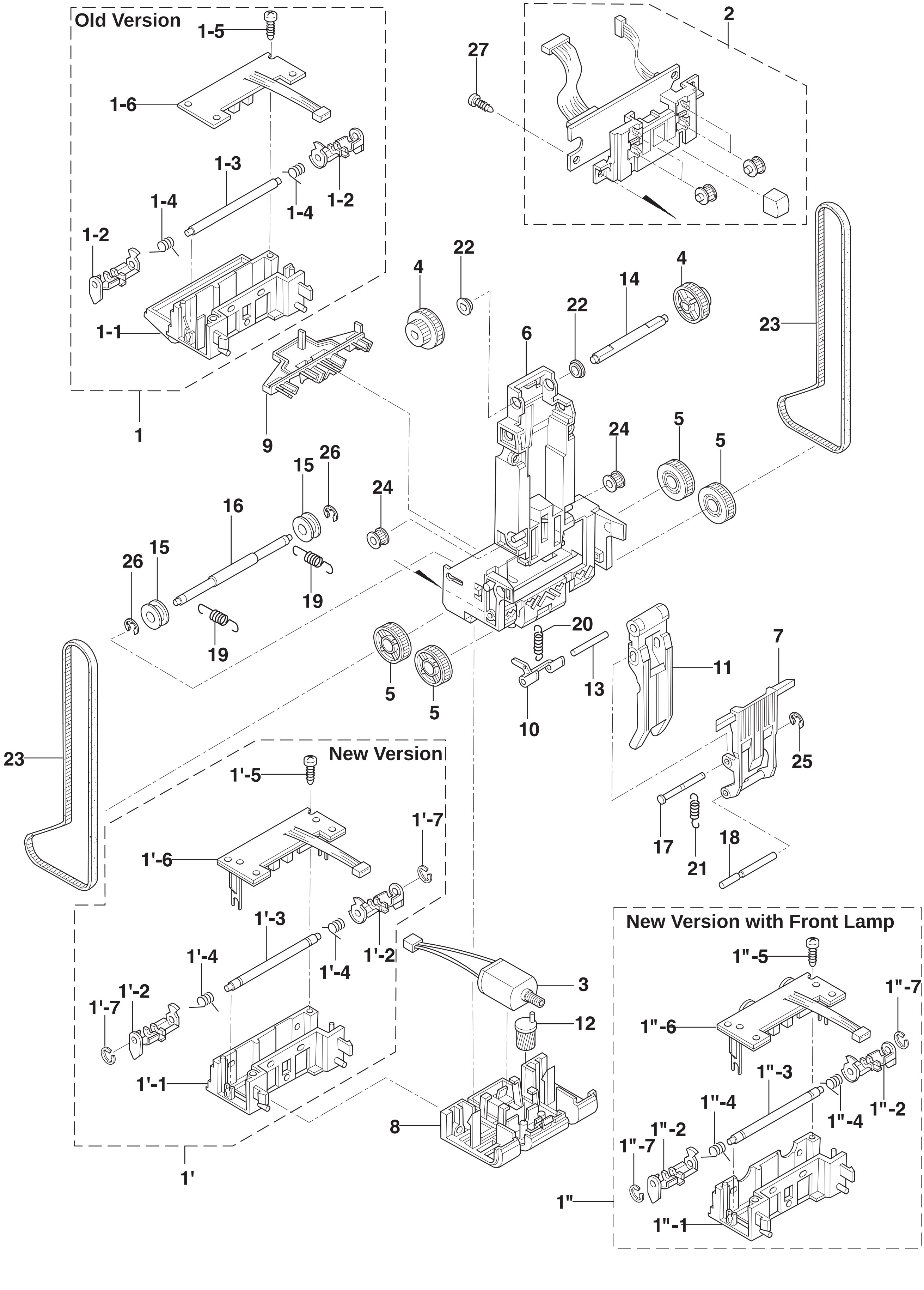
11. EXPLODED VIEW AND PARTS LIST

11-1. NBM-3000 SERIES



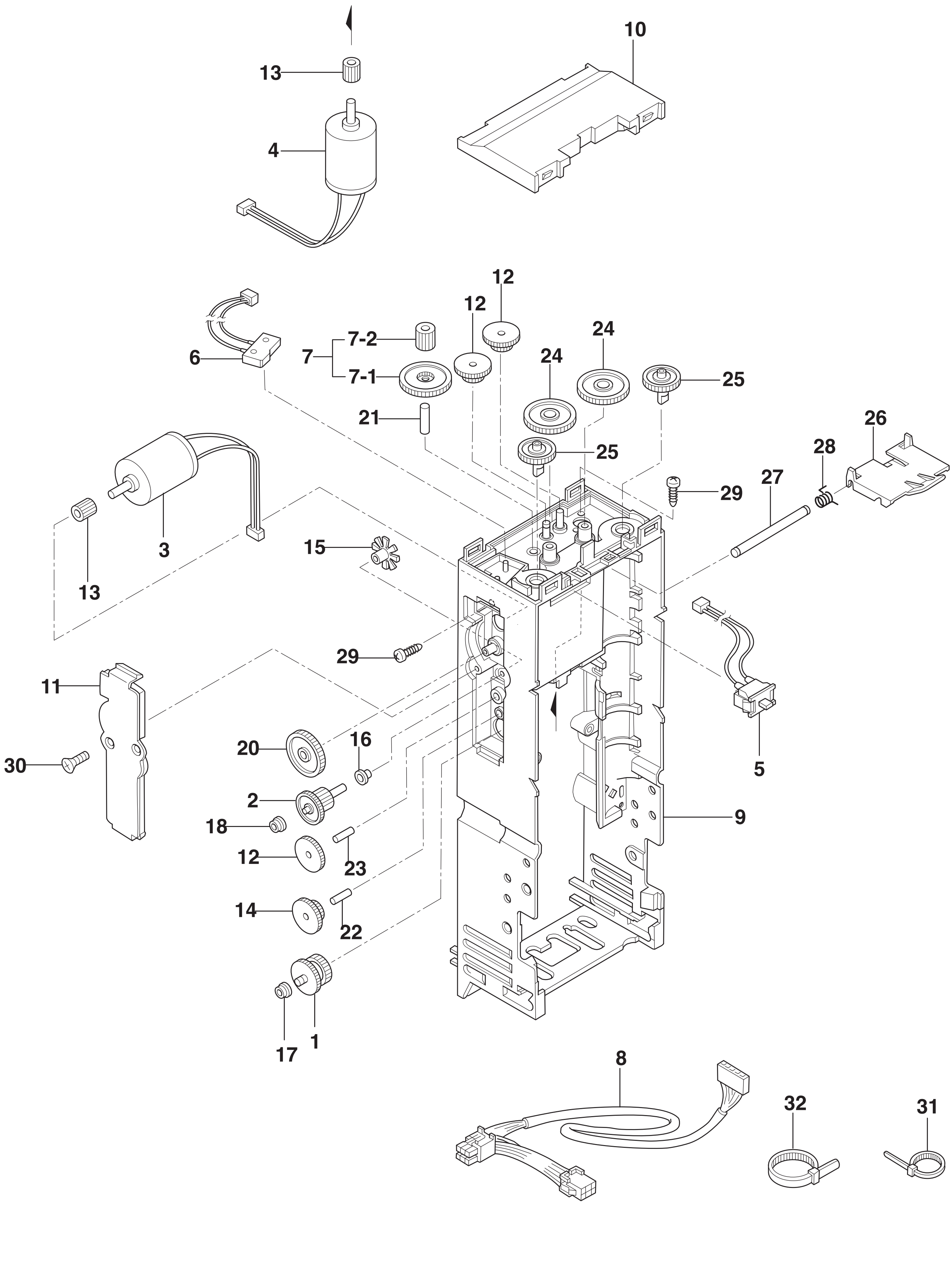
INDEX NO.	PART NO.		DESCRIPTION	QTY	REMARKS	MODELS
	Parts No.(10 digits)	Draw No.				
0	0000436010	043601	NBM-3110 Bill Validator	1	Mask 1-700 Stacker	
0	0000436020	-	NBM-3120 Bill Validator	1	Mask 1-400 Stacker	
0	0000436030	-	NBM-3130 Bill Validator	1	Mask 2-700 Stacker	
0	0000436040	-	NBM-3140 Bill Validator	1	Mask 2-400 Stacker	
0	0000436050	043605	NBM-3110-M Bill Validator	1	Mask M-700 Stacker	
0	0000436060	043606	NBM-3120-M Bill Validator	1	Mask M-400 Stacker	
1	8210010014	436103	Lift Base Assy	1	Old Version (obsolete)	NBM-3110, 3120
1	8210010024	-	Lift Base Assy (2)	1		NBM-3130, 3140
1	8210010034	-	Lift Base Assy (3)	1	Front Lamp Type	NBM-3110, 3120
2	8510010011	436104	Housing Assy	1		
3	8212010010	436105	Shute (B) Assy	1		
4	8110010010	436106	Front Mask (1) Assy	1	Old Version (obsolete)	NBM-3110, 3120
4	8110010011	-	Front Mask (1) Assy	1	Front Lamp Type	NBM-3110, 3120
5	8110010020	-	Front Mask (2) Assy	1		NBM-3130, 3140
6	8030010010	-	Front Mask-Metal Assy	1	Metal Old (obsolete)	NBM-3110-M, 3120-M
6	8030010020	-	Front Mask-Metal Assy	1	Front Lamp Type	NBM-3110-M, 3120-M
7	8030010030	-	700 Stacker Box Assy-SL	1	Decals Included	NBM-3110, 3130
8	8030010040	-	400 Stacker Box Assy (2)-SL	1	Decals Included	NBM-3120, 3140
9	8461010010	436117	Drum (R) Assy	1		
10	8461010020	436118	Drum (L) Assy	1		
11	86X0010084	-	Control Board Assy	1		Data Stored Function
11	86X0010094	-	Control Board Assy (2)	1	Front Lamp Type	Data Stored Function
12	8461210060	436416	Drum Giude (R)	1		
13	8461210070	436417	Drum Giude (L)	1		
14	3912931001	-	Stacker Decal	1		
15	3912931010	436532	Stacker Lid Decal	1		
16	3911950140	-	Model/Serial Plate	1		Not for resale
17	3532030090	476478	Output Shaft Bearing (1)	1		
18	3913950300	-	Flash ROM Seal	1		Option
19	3253030810	904315	Self-Tapping Screw	4	(+)Pan-head 3 x 8	
20	3253031010	904316	Self-Tapping Screw	4	(+)Pan-head 3 x 10	
21	3257030810	904602	Self-Tapping Screw	2	(+)Flush-head 3 x 8	

11-2. Lift Base Assy



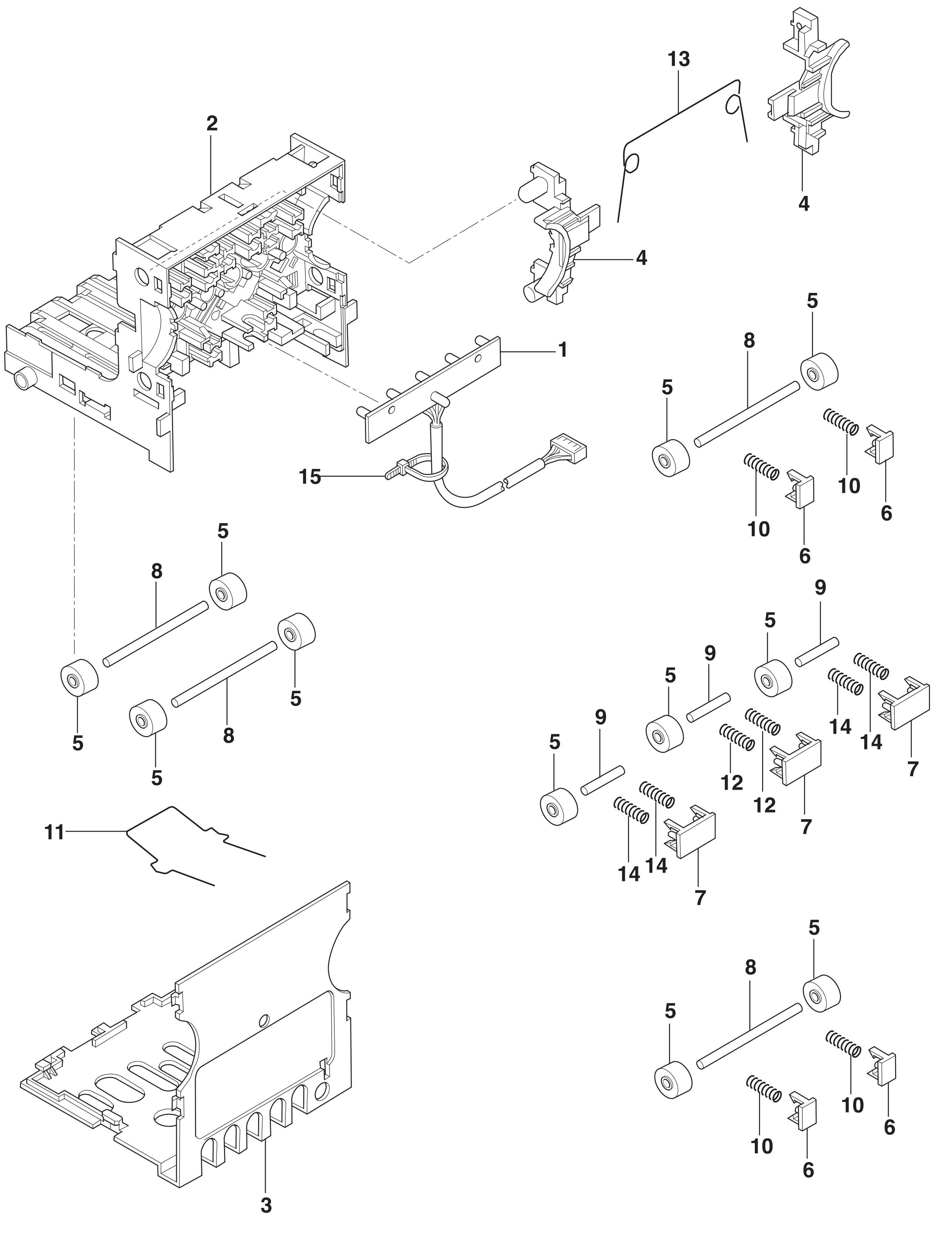
INDEX NO.	PART NO.		DESCRIPTION	QTY	REMARKS	MODELS
	Parts No.(10 digits)	Draw No.				
0	8210010014	436103	Lift Base Assy	1	Includes 1~27	NBM-3110, 3120
0	8210010024	-	Lift Base Assy (2)	1	Includes 1~27	NBM-3130, 3140
0	8210010034	-	Lift Base Assy (3)	1	Front Lamp Type	NBM-3110, 3120
1	8130010013	436108	Mask Chute (Upper) Assy	1	Includes 1-1~1-6	NBM-3110, 3120
1	8130010023	-	Mask Chute (Upper) (2) Assy	1	Includes 1-1~1-6	NBM-3130, 3140
1-1	8111210023	436421	Mask Chute (Upper)	1		NBM-3110, 3120
1-1	8111210042	-	Mask Chute (Upper) (2)	1		NBM-3130, 3140
1-2	8132105010	468412	Inlet Lever	2		
1-3	3821030650	436505	Inlet Lever Shaft	1		
1-4	3814010890	436515	Inlet Lever Spring	2		
1-5	3253030810	904315	Self-Tapping Screw	2	(+)Pan-head 3 x 8	
1-6	81X0010011	-	Inlet Sensor Board Assy	1	Obsolete	
1'	8130010013	-	Mask Chute (Upper) Assy	1	Includes 1'-1~1'-7	NBM-3110, 3120
1'	8130010023	-	Mask Chute (Upper) (2) Assy	1	Includes1'-1~1'-7	NBM-3130, 3140
1'-1	8111210023	436421	Mask Chute (Upper)	1		NBM-3110, 3120
1'-1	8111210042	-	Mask Chute (Upper) (2)	1		NBM-3130, 3140
1'-2	8132105010	468412	Inlet Lever	2		
1'-3	3822030230	-	Inlet Lever Shaft (2)	1		
1'-4	3814010890	436515	Inlet Lever Spring	2		
1'-5	3253031010	-	Self-Tapping Screw	2	(+)Pan-head 3 x 10	
1'-6	81X0010012	-	Inlet Sensor Board Assy	1		
1'-7	3551020010	-	E-ring	2		
1"	8130010031	-	Mask Chute (Upper)(3) Assy	1	Includes 1"-1~1"-7	NBM-3110, 3120
1"-1	8111210023	-	Mask Chute (Upper)(3)	1		NBM-3110, 3120
1"-2	8132105010	468412	Inlet Lever	2		
1"-3	3822030230	-	Inlet Lever Shaft (2)	1		
1"-4	3814010890	436515	Inlet Lever Spring	2		
1"-5	3253031010	-	Self-Tapping Screw	2	(+)Pan-head 3 x 10	
1"-6	81X0010021	-	Inlet Sensor Board (2) Assy	1	Front Lamp Type	
1"-7	3551020010	-	E-ring	2		
2	8F10010011	436109	Head Bracket Assy	1		
3	8143010040	-	Shutter Motor Assy	1		
4	3693220020	436115	Carrier Pulley (1) Assy	2		
5	3731030040	436116	Carrier Pulley (2) Assy	4		
6	8211110023	436405	Lift Base	1		
7	8461210050	436403	Stacker Chute	1		
8	8211110012	436401	Chute (A)	1		
9	8143310010	436411	Shutter	1		
10	8222110010	436425	P2 Lever	1		
11	8461210080	436426	Stacker Lever	1		
12	3694220020	436431	Shutter Gear	2		
13	3821020270	436530	P2 Lever Shaft	1		
14	3821040300	436510	Drive Shaft	1		
15	3831220560	436504	Idler	2		
16	3821040290	436506	Idler Shaft	1		
17	3822040260	436508	Lift Base Shaft (1)	1		
18	3821030660	436509	Lift Base Shsft (2)	1		
19	3813010570	436518	Idler Spring	2		
20	3813010580	436521	P2 Lever Spring	1		
21	3813010640	436529	Stacker Chute Spring	1		
22	3532040040	435509	Drive Bearing (2)	2		
23	3711180010	927174	Belt	2	B180MXL3.2	
24	3731012050	479418	Pulley (1)	2		
25	3551020010	907403	E-ring	1		
26	3551030010	907404	E-ring	2		
27	3253030810	904315	Self-Tapping Screw	1	(+)Pan-head 3 x 8	

11-3. Housing Assy



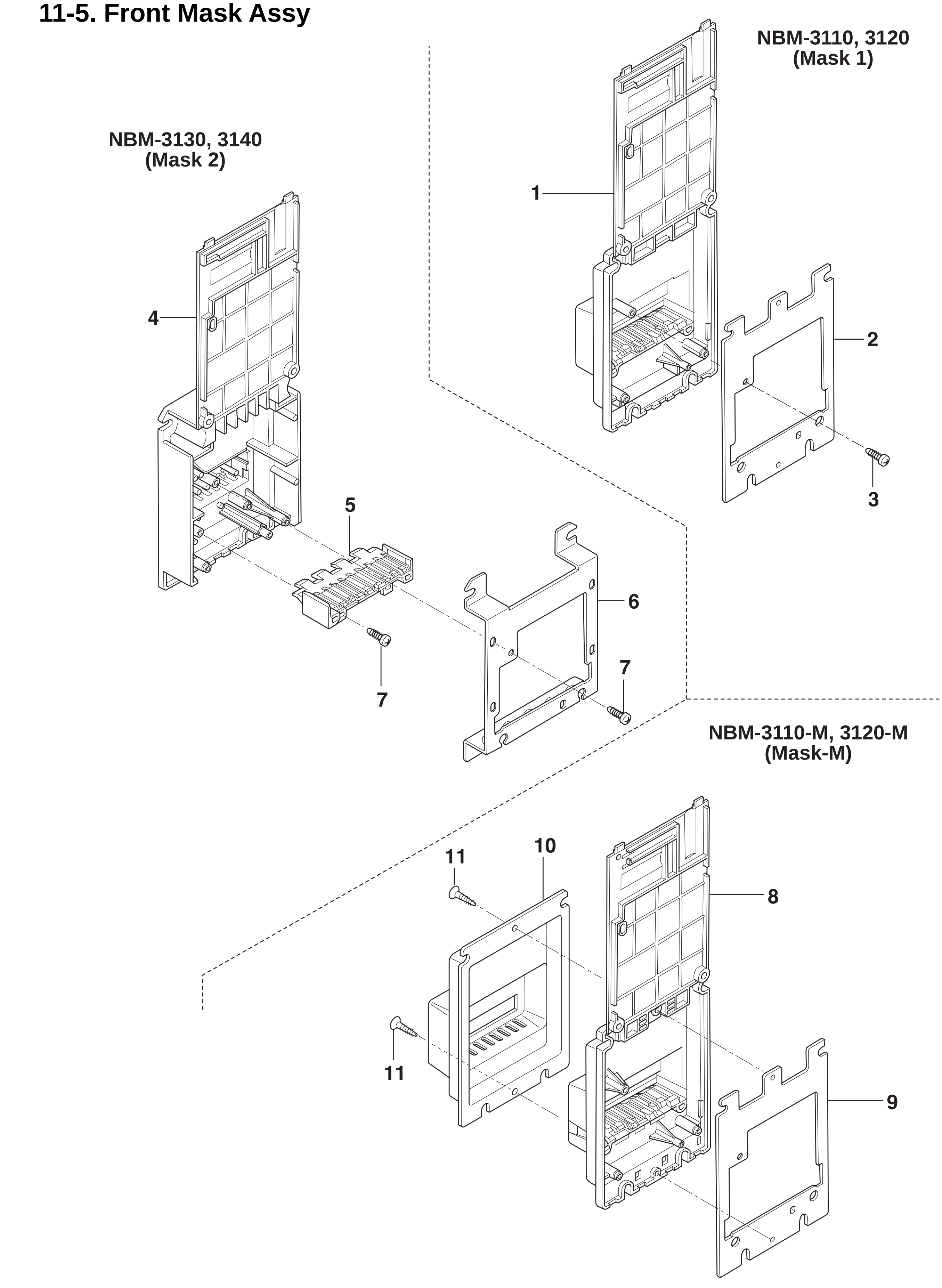
INDEX NO.	PART NO.		DESCRIPTION	QTY	REMARKS	MODELS
	Parts No.(10 digits)	Draw No.				
0	8510010010	436104	Housing Assy	1	Includes 1~32	
0	8510010011	-	Housing Assy	1	New Version	
1	8241010010	436101	Output Shaft Assy	1	Includes 1-1~1-4	
1-1	-	-	Output Gear	1	Assembly Only	
1-2	-	-	Gear (2)	1	Assembly Only	
1-3	-	-	Bearing (3)	1	Assembly Only	
1-4	-	-	Output Shaft	1	Assembly Only	
2	8241010020	436102	Pulse Shaft Assy	1	Includes 2-1, 2-2	
2-1	-	-	Pulse Shaft	1	Assembly Only	
2-2	-	-	1st Gear	1	Assembly Only	
3	8F31010010	436111	Carrier Motor Assy	1	Includes 3-1, 3-2	
3-1	-	-	Motor	1	Assembly Only	
3-2	-	-	Carrier Motor Harness Assy	1	Assembly Only	
4	8441010010	436112	Stack Motor Assy	1	Includes 4-1, 4-2	
4-1	-	-	Motor	1	Assembly Only	
4-2	-	-	Stack Motor Harness Assy	1	Assembly Only	
5	8472010010	436113	Safety Switch Assy	1	Includes 5-1, 5-2	
5-1	-	-	Push Switch	1	Assembly Only	
5-2	-	-	Safety Switch Harness Assy	1	Assembly Only	
6	8462010010	436114	Carrier Switch Assy	1	Includes 6-1, 6-2	
6-1	-	-	Micro Switch	1	Assembly Only	
6-2	-	-	Carrier Switch Harness Assy	1	Assembly Only	
7	5831001030	-	Gear (A) Comp.	1	Includes 7-1, 7-2	
7-1	-	-	Gear (A)	1	Assembly Only	
7-2	-	-	Insert Pinion	1	Assembly Only	
8	4116000030	436311	M.D.B. Harness Assy	1		
9	8511110011	-	Housing	1	Obsolete	
9	8511110015	-	Housing	1	New Version	
10	8514110020	436419	Stack Gear Cover	1		
11	8514110031	436420	Carrier Gear Cover	1		
12	3624220020	210497	2nd Gear	3		
13	3612230050	461455	Carrier Motor Pinion	2		
14	3624140010	476499	2nd Gear (2)	1		
15	8231304010	461413	Tachometer	1		
16	3532020040	476917	Pulse Bearing (2)	1		
17	3532030090	476478	Output Bearing (1)	1		
18	3532G10010	436538	Bearing (2)	1		
19						
20	3614220070	-	Carrier Gear (2)-M	1		
21	3821030570	735513	Head Roller Shaft	1		
22	3821E20051	436511	Gear Shaft	1		
23	3821E30030	-	Gear Shaft (2)	1		
24	3615220040	436429	Stack Gear	2		
25	3694220010	436430	Stack Output Gear	2		
26	8512110010	436441	Main Latch	1		
27	3821030200	461540	Latch Shaft	1		
28	3814010940	436526	Main Latch Spring	1		
29	3211030410	900006	Screw	4	(±)Pan-head M3 x 4	
30	3257030810	904602	Self Tapping Screw	2	(+)Flush-head 3 x 8	
31	4774900010	994047	Tie Wrap	1		
32	4774900050	927039	Tie Wrap	1		

11-4. Chute (B) Assy



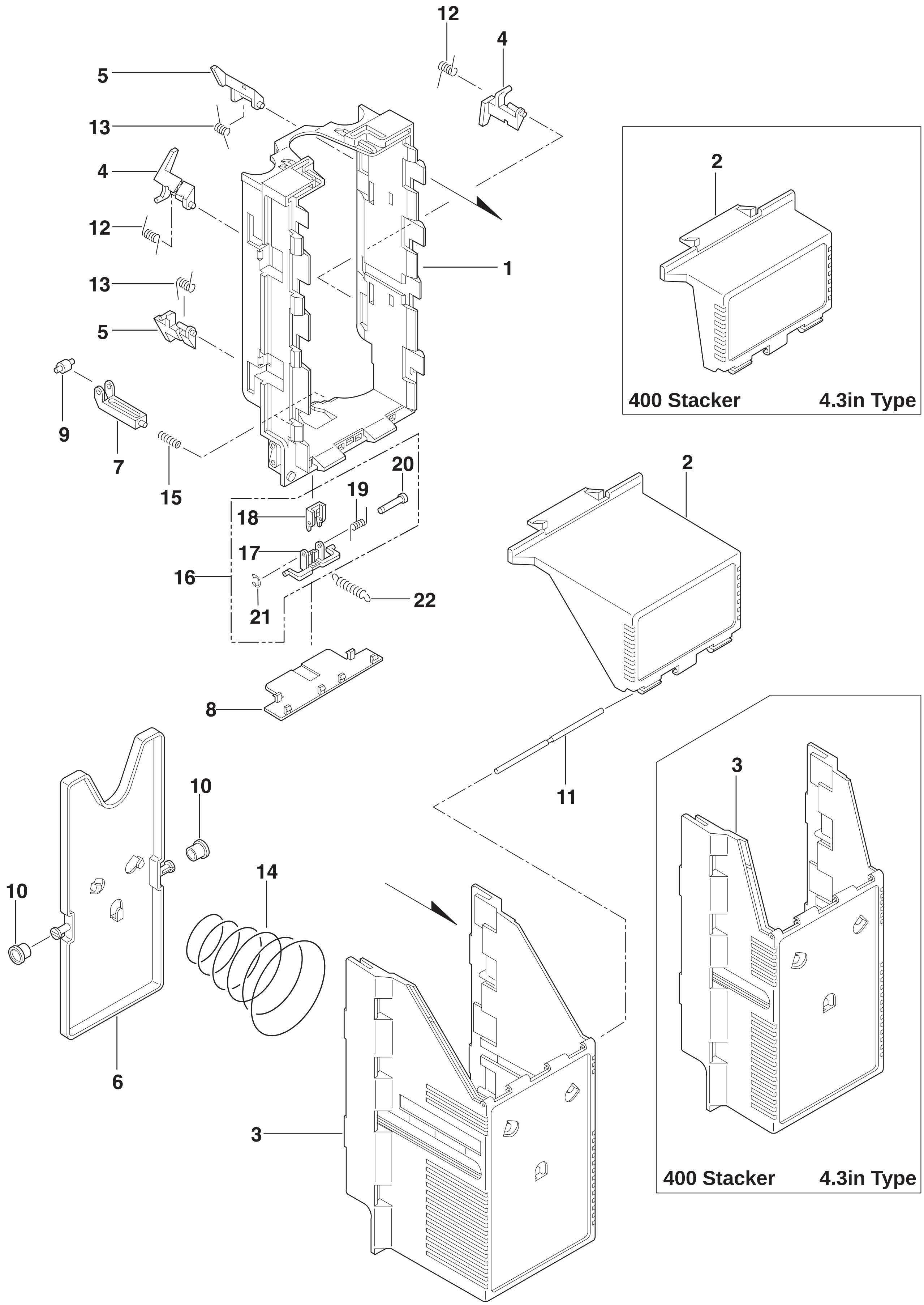
INDEX NO.	PART NO.		DESCRIPTION	QTY	REMARKS	MODELS
	Parts No.(10 digits)	Draw No.				
0	8212010010	436105	Chute (B) Assy	1	Includes1~15	
1	8FX0010020	436205	Photo Interrupter Board Assy	1		
2	8212110010	436402	Chute (B)	1		
3	8514110010	436407	Chute (B) Cover	1		
4	8213110010	436422	Chute (B) Latch	2		
5	3831220340	478446	Roller (2)	11		
6	8252109010	478432	Roller Shaft Brachet (1)	4		
7	8252110010	478433	2nd Roller Shaft Bracket	3		
8	3821020280	436534	Roller Shaft	4		
9	3821020220	479508	Pinch Roller Shaft	3		
10	3811010330	478539	Roller Spring (1)	4		
11	3816010040	436517	Carrier Roller Spring	1		
12	3811010630	436519	Pinch Roller Spring	2		
13	3816010050	436520	Chute Latch Spring	1		
14	3811010700	478540	2nd Roller Spring	4		
15	4774900010	994047	Tie Wrap	1		

11-5. Front Mask Assy



INDEX NO.	PART NO.		DESCRIPTION	QTY	REMARKS	MODELS
	Parts No.(10 digits)	Draw No.				
0	8110010010	436106	Front Mask (1)Assy	1	Includes 1~3(obsolete)	NBM-3110, 3120
0	8110010011	-	Front Mask (1)Assy(Front Lamp)	1	Includes 1~3	NBM-3110, 3120
0	8110010020	-	Front Mask (2) Assy	1	Includes4~7	NBM-3130, 3140
0	8030010010	-	Front Mask-M Assy	1	Includes 8~11	NBM-3110-M, 3120-M
0	8030010020	-	Front Mask-M Assy (Front Lamp)	1		NBM-3110-M, 3120-M
1	8111210012	-	Mask (1)	1	Obsolete	
1	8111210013	-	Mask (1)	1	Front Lamp Type	
2	8141110011	-	Mask Base (1)	1		
3	3253030810	904315	Self-Tapping Screw	1	(+)Pan-head 3 x 8	
4	8111210030	-	Mask (2)	1		
5	8111210051	-	Mask Chute (Lower) (2)	1		
6	8141110020	-	Mask Base (2)	1		
7	3253030810	904315	Self-Tapping Screw	3	(+)Pan-head 3 x 8	
8	8111210061	-	Mask (3)	1		Use 8030010020
9	8141110011	-	Mask Base (1)	1		Use 8030010020
10	8141110040	-	Mask Cover	1	Obsolete	
10	8141110070	-	Mask Cover	1	Front Lamp	Use 8030010020
11	3258030810	-	Self-Tapping Screw	2	(+)Flush-head M3 x 8	Use 8030010020

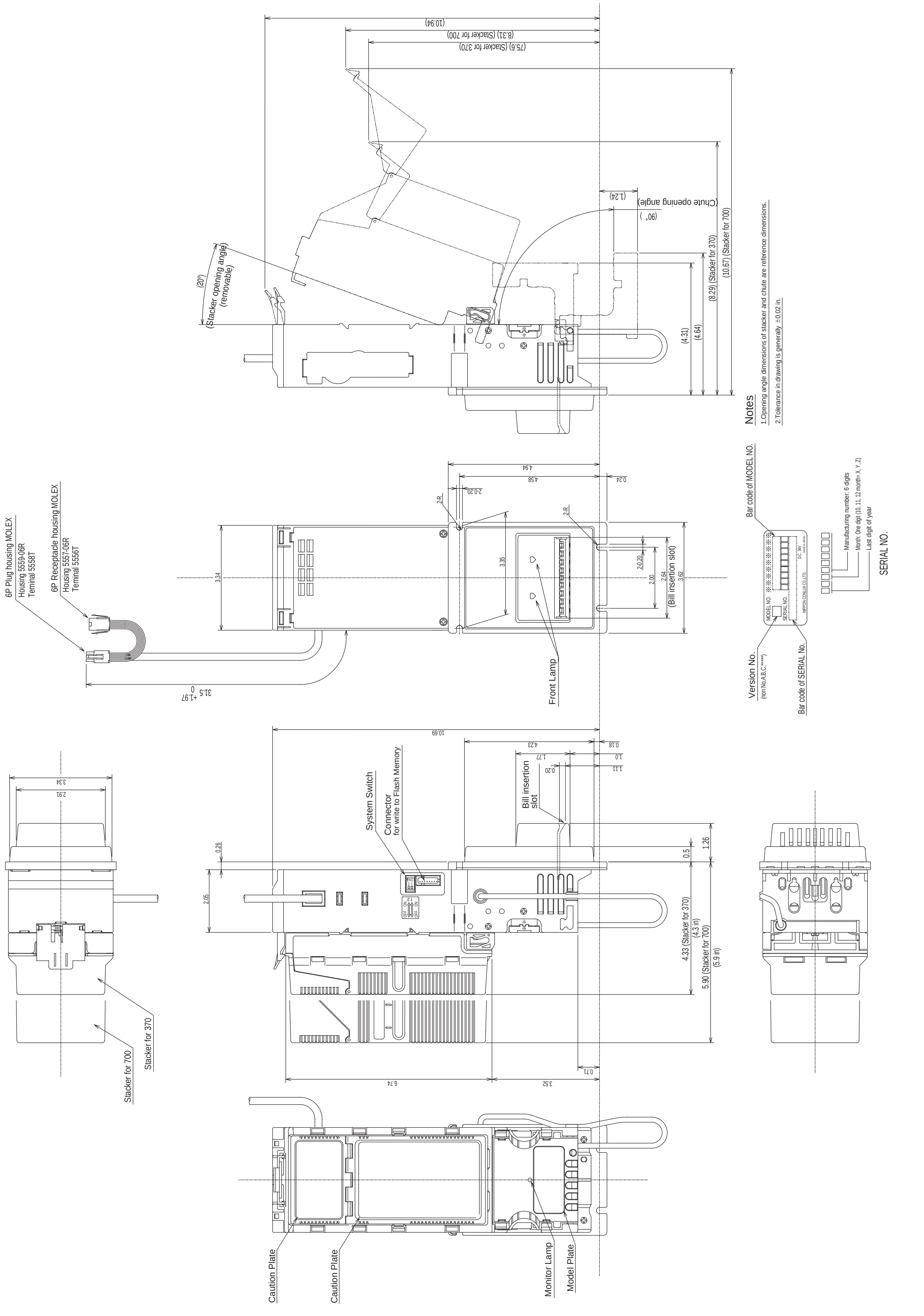
11-6. Stacker Assy



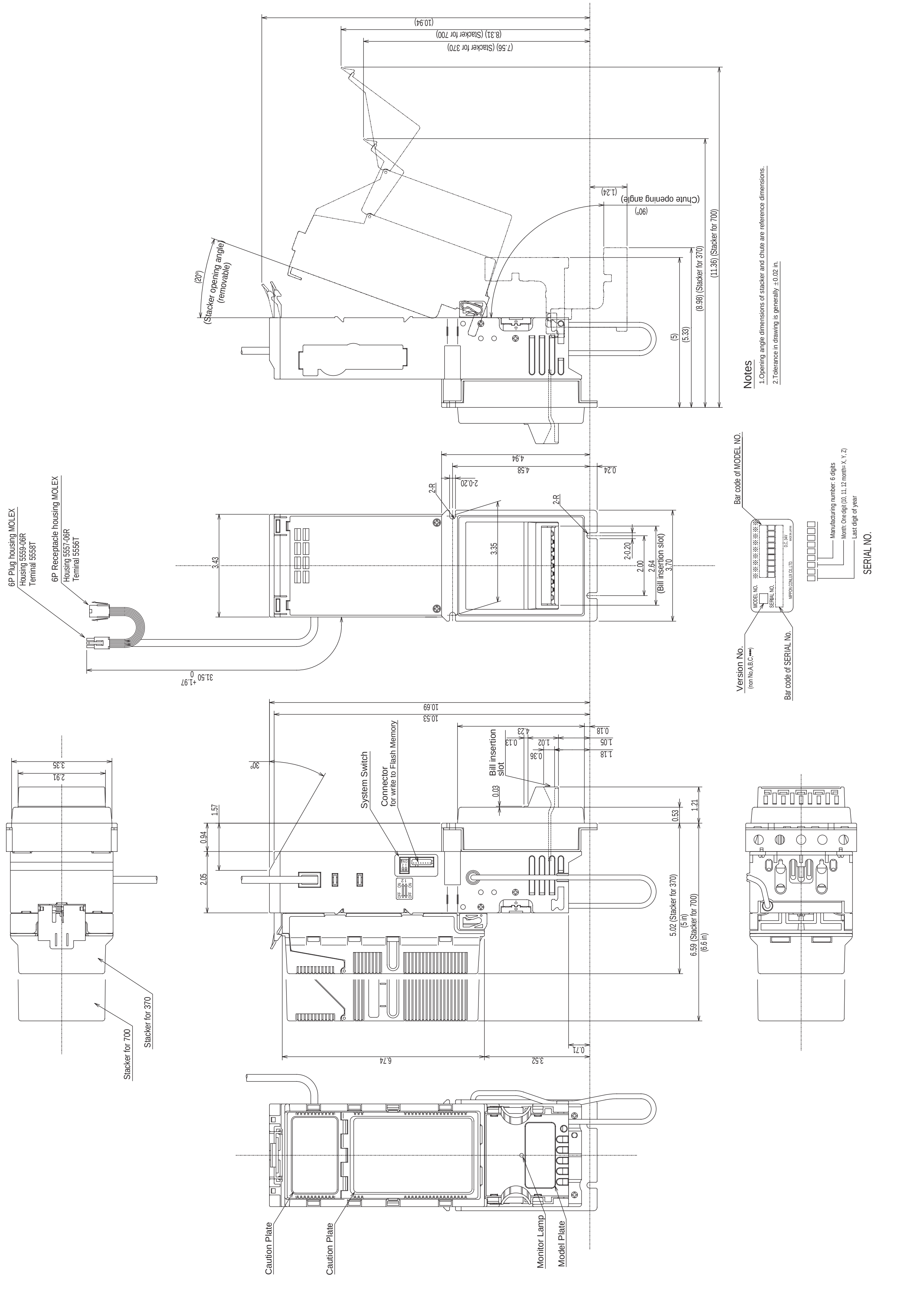
INDEX NO.	PART NO. Parts No.(10 digits)	Draw No.	DESCRIPTION	QTY	REMARKS	MODELS
0	8030010030	436107	700 Stacker Assy (2)-SL	1	Includes 1~21	NBM-3110, 3130
0	8030010040	-	400 Stacker Assy-SL	1	Includes 1~21	NBM-3120, 3140
1	8481110011	-	Stacker Box Guide	1		
2	8481110020	436409	Stacker Lid (Upper)	1		NBM-3110, 3130
2	8481110040	436439	Stacker Lid (Upper) (2)	1		NBM-3120, 3140
3	8481110030	436410	700 Stacker (Lower)	1		NBM-3110, 3130
3	8481110050	436440	400 Stacker (Lower) (2)	1		NBM-3120, 3140
4	8481210010	436427	Stack Lever (R)	2		
5	8481210020	436428	Stack Lever (L)	2		
6	8481210030	436438	StackPlate	1		
7	8252110020	436442	Stack Roller Bracket	2		
8	8252110030	436443	StackerCover	1		
9	3831220690	436535	Stack Roller	2		
10	8481209020	478449	Plate Guide (2)	2		
11	3821020260	436514	Stacker Box Shaft	1		
12	3814010920	436523	Stack Lever Spring (R)	2		
13	3814010930	436524	Stack Lever Spring (L)	2		
14	3812010190	436525	Pressure Spring (1)	1		NBM-3110, 3130
14	3812010220	436536	Pressure Spring (2)	1		NBM-3120, 3140
15	3811010330	478539	Roller Spring (1)	2		
16	8212010020	-	Prevention Lever Assy	1	Includes17~21	
17	-	-	Prevention (of hanging) Lever (1)	1	Assembly Only	
18	-	-	Prevention (of hanging) Lever (2)	1	Assembly Only	
19	-	-	Prevention Lever Spring (2)	1	Assembly Only	
20	-	-	Prevention Lever Shaft	1	Assembly Only	
21	3551C10010	907409	E-ring	1	Assembly Only	
22	3813010630	436528	Prevention Lever Spring (1)	1		

12. EXTERNAL VIEW AND DIMENSIONS

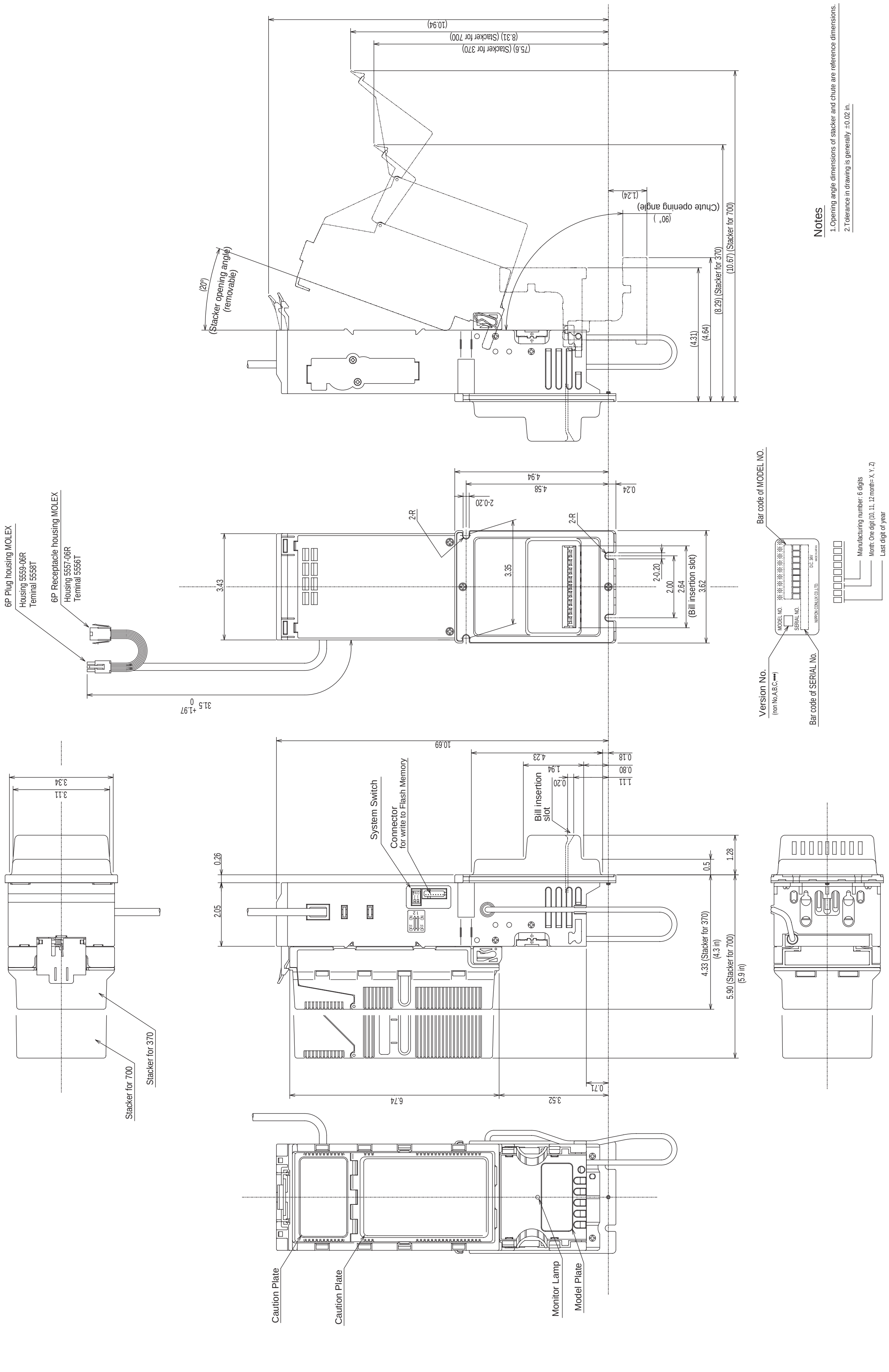
12-1. NBM-3110, 3120 SERIES



12-2. NBM-3130, 3140 SERIES



12-3. NBM-3110-M, 3120-M SERIES



WHEN CALLING FOR SERVICE, PLEASE PROVIDE THE FOLLOWING INFORMATION:

MODEL NUMBER: ____

SERIAL NUMBER: ____

Vendnet
A WITTERN GROUP COMPANY

165 NORTH 10TH STREET
WAUKEE, IA 50263
TEL: 1-877-4CONLUX
(1-877-426-6589)

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